

TURNKEY SECURITY SYSTEM SOLUTION FOR KARNATAKA SECURE EXAMINATION SYSTEM (KSES)

PROBLEM

The Karnataka Education Department needed a secure system in place to monitor the PU examinations and manage the entire process right from Question Paper manuscripts to distribution of physical papers without any vulnerabilities or leaks in between.

In this process, the Karnataka Education Department created the KSES (Karnataka Secure Examination System) and was looking for a turnkey partner to manage the entire process.

INTRODUCTION

In our Education system, examinations play a vital role and it is of paramount importance that a secure system exists to evaluate each and every student on fair grounds. Karnataka is a leading state in its education systems and its assessment activities.

There were multiple occasions in the past years, including the state and our country, where the question papers were leaked and it caused extensive measures to be taken by the authorities to tackle these situations.

In 2017, authorities wanted to deploy precautionary measures in place to avoid any form of cheating and provide a clean and equitable exam for all students.

In March 2017, the Karnataka State PUE Department introduced KSES (Karnataka Secure Examination System) for the security and surveillance management of processes at all stages such as

- Question Paper (QP) Manuscript setting
- QP Manuscript Storing at PUE Director's Secret Chamber
- Mass printing at Printers
- Mass storage of printed QP bundles at PUE Strong Room and 33 District Treasuries
- Distribution of QP Bundles to respective authorized route officers pertaining to the 998 examination centers across all districts during each examination date.

Locations in the Overall System	No.
Karnataka State Data centre	1
Offline QP setting locations	5
PUE Director's Ante Chamber	1
Printers	1
PUE Strong room	1
District Treasuries	33
Examination centres	998
DOT monitoring centre	1
PUE monitoring centre	1



KSES PROCESS STAGES

Stages in the KSES process	Security Processes at each Stage
Question papers (QP) manuscripts – QP setting process	- AnexSECURE CCTV surveillance - AnexSECURE Barcode scanning - Biometric registration & attendance
QPs manuscripts' sent to printing press for printing	- Barcoding
Secure Storage of printed QP packets at Strong room	- Strong room under AnexSECURE CCTV surveillance - AnexSECURE Barcode scanning of all receiving /issuing QP packets - Biometric registration & attendance of all QP packet handlers - Streaming of video and data to SDC servers; SMS/email alerts configured as per requirements
Secure Storage of printed QP packets at district treasuries (33 district treasury locations)	- District treasuries under AnexSECURE CCTV surveillance - AnexSECURE Barcode scanning of all receiving QP packets - Biometric registration & attendance of all QP packet handlers - Streaming of video and data to SDC servers; SMS/email alerts configured as per requirements
Secure distribution of QP packets to examination centres' Taluka officers from district treasuries	- District treasuries under AnexSECURE CCTV surveillance - AnexSECURE Barcode scanning of all issuing QP packets - Biometric registration & attendance of all QP packet receivers - Streaming of video and data to SDC servers; SMS/email alerts configured as per requirements
Cloud hosting of video and applications in the Karnataka State Data Centre (SDC)	- AnexGATE USG and VPN solutions for secure VPN connectivity & failover/ load balancing internet solutions between KSWAN intranet & Internet connections across all client locations

ROLE OF SSSPL

SSSPL, having more than a decade of experience in providing secure systems for surveillance and networking, was selected as a turnkey solutions partner to securely manage KSES for the Karnataka Education Department within a short period of time of only 2 months.

The entire solution was carefully orchestrated by two divisions under SSSPL, AnexGATE that manages network solutions and AnexSECURE that handles surveillance management and biometric systems

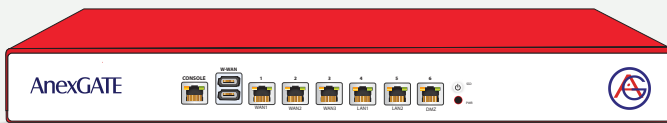
By the integration of these two divisions, SSSPL created sophisticated and highly secure systems that would help the Karnataka Education Department to successfully carry out the entire process of PU Examinations without any vulnerabilities.

LIST OF SECURITY SYSTEMS DEPLOYED

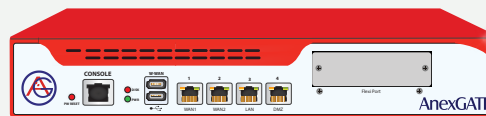
• AnexSECURE Surveillance Systems



• AnexGATE Networks Security Appliances



AnexGATE USG



AnexGATE VPN



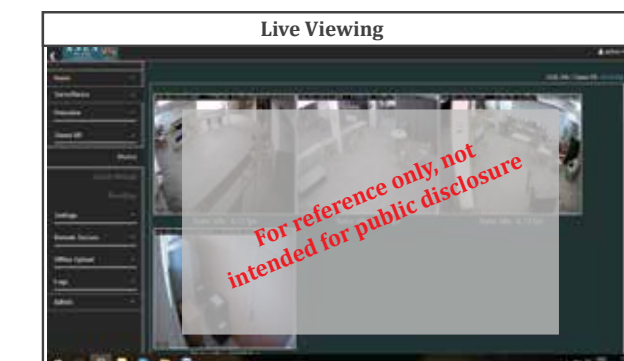
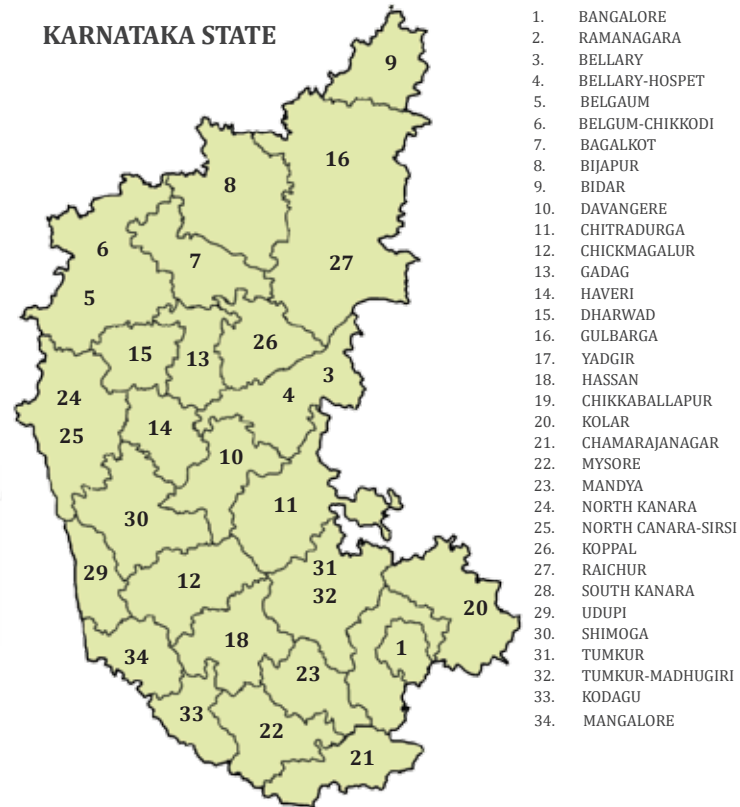
AnexGATE ACE

SOLUTIONS

AnexGATE USG and VPN Concentrator to monitor and secure the entire network

- These appliances were installed in the Karnataka State Data Centre (SDC) for securing the entire network of PUE KSES
- This location contained the entire streaming and hosting database for all video and application for PUE KSES.
- The main application of all these appliances was to secure all the information in the server and not allow unauthorised access into these server to tamper the information.
- One of the main functions of these appliances was to keep these systems always online (High Uptime) to not cause compromise to security detail at any point

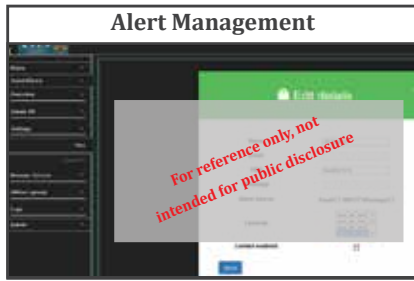
CCTV DEPLOYMENT AT ALL DISTRICT TREASURIES



ANEXSECURE CCTV SURVEILLANCE SYSTEMS (UNDER MOTION DETECTION MODE)

- The direct feed from all the cameras from all the distributed locations were added directly to the secure server location.
- An option of Motion Detection mode can be set to the cameras and all users can be added to the alert list (dedicated users can be disabled if required). SMS/Email alerts can also be added to this system
- All cameras were of High definition. Specific cameras dedicated for specific locations can be added to the system for better surveillance

Important Facts	
Number of Students	6,84,287
Time Frame	60 Days
Number of Examination Centres	998
Highest number of Exam Centres	76
Number of People in the Process	5000

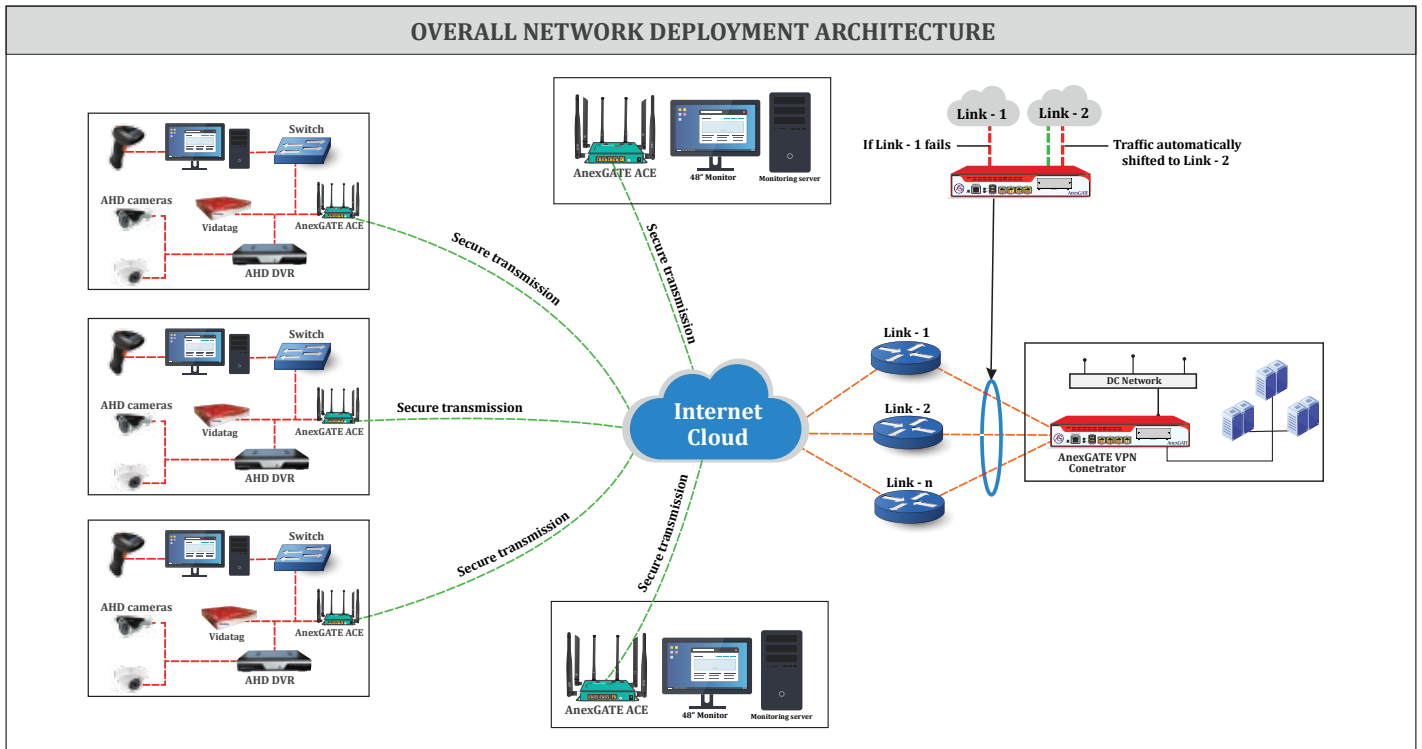
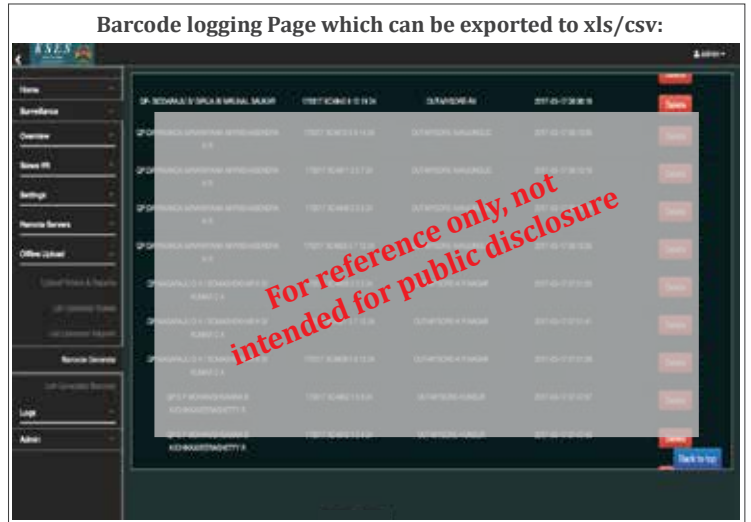


BAR CODE SCANNING & BIOMETRIC ATTENDANCE

- An application software (if required) can be developed for capturing the identity of the total number of people involved in the process
- Thumb impression registration was carried out in an authenticated manner, along with another verified thumb impression
- Punch in/Punch Out fingerprint attendance was taken at every step.
- The entire Question paper package management was done under bar code scanning using the barcode software at every stage and location.

NOTE:

All the data from the above processes was integrated into the surveillance software so that per location video reports, barcode scan and fingerprint impression can be clearly accessible from one software interface.



SUMMARY

- The entire communication required to and from these endpoint equipments and softwares was carried out in a secure manner by successfully dedicating responsibility for each individual component and monitoring all of it under a secure surveillance system. All the equipments and individuals involved in the above process carried out communication through a secure tunnel created by AnexGATE USG appliances for all information to be confidential.
- The solution is scalable and also can be customized for any state or any examination system.

CONTROL ROOM MONITORING



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