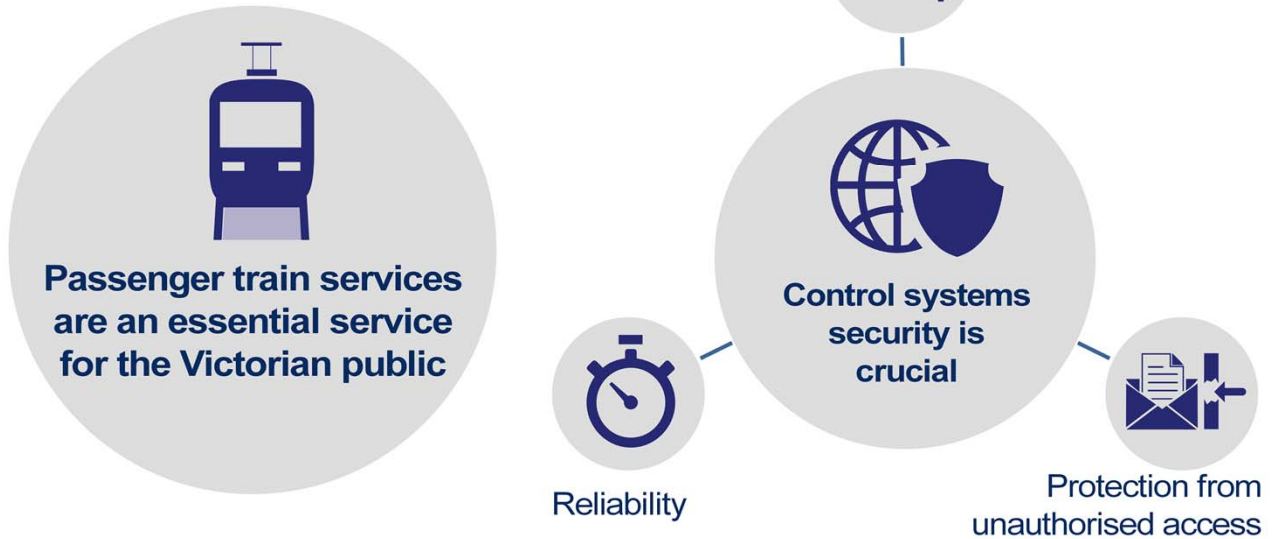


Security of Critical Infrastructure Control Systems for Trains

Tabled 9 November 2016

This presentation provides an overview of the Victorian Auditor-General's report *Security of Critical Infrastructure Control Systems for Trains*.

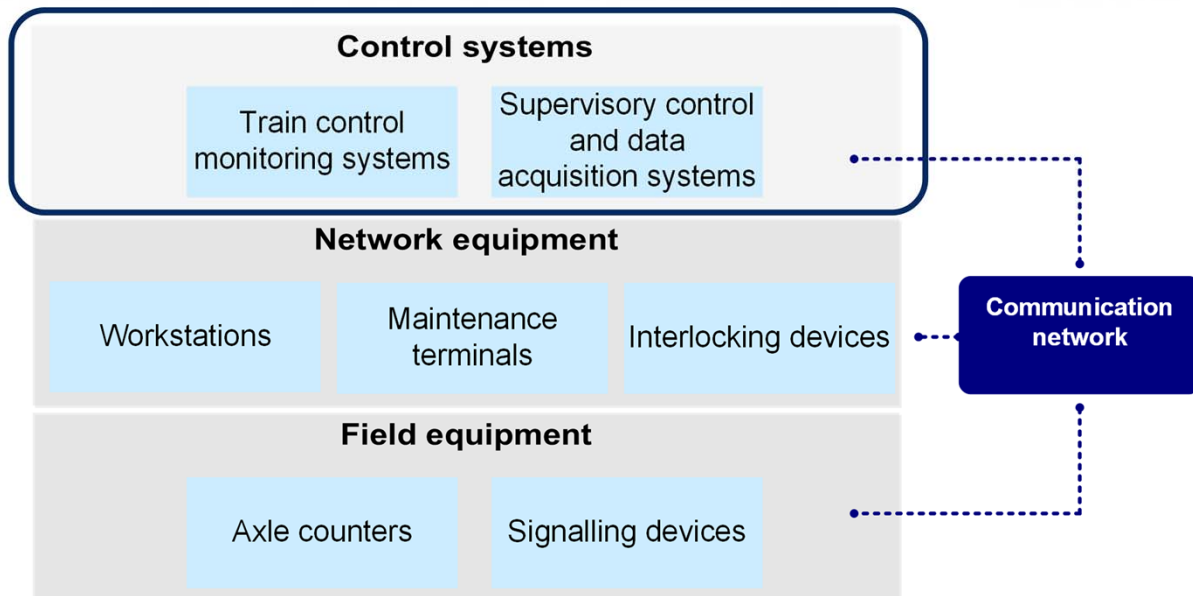
Overview



Passenger train services are an essential service for the Victorian public, much like electricity, water, gas and port services. Train services rely on a range of systems and equipment, including control systems that monitor and control service delivery.

As cyber attacks become increasingly automated and sophisticated, control system security is crucial in ensuring that train services are sustainable, protected from unauthorised access and reliably operated and delivered.

What are control systems?



So what are control systems?

Control systems are computer-based systems that monitor and control the critical infrastructure that deliver train services. This infrastructure includes network equipment, field equipment and the communication network.

Our audit focused specifically on the control systems within the network.

What we looked at



We examined the security of the control systems used by Victoria's train operators and Public Transport Victoria's (PTV) oversight of these operators.



Agencies involved:

- PTV
- Department of Economic Development, Jobs, Transport & Resources (DEDJTR)
- Metro Trains Melbourne
- V/Line
- Victorian Rail Track
- Emergency Management Victoria

This audit examined the security of the control systems used by Victoria's train operators and Public Transport Victoria's (PTV) oversight of these operators.

The agencies involved in this audit were PTV, the Department of Economic Development, Jobs, Transport & Resources (DEDJTR), and the train operators Metro Trains Melbourne and V/Line, as well as Victorian Rail Track and Emergency Management Victoria.

What we found



Weaknesses in security of control systems, identified in our 2010 audit, *Security of Infrastructure Control Systems for Water and Transport*, remain.



We:

- issued management letters to PTV
- gave written information to relevant ministers and a department head
- notified the Premier.



During our audit, PTV started to address the issues that we identified.

In our 2010 audit, *Security of Infrastructure Control Systems for Water and Transport*, we noted significant weaknesses in the security of control systems of water and train operators, and we made recommendations to address these weaknesses. We found that there has been little improvement in the security of train control systems since 2010, and significant weaknesses remain. We found that these weaknesses are due to:

- poor governance arrangements and management oversight
- limited security frameworks and security controls
- poor transfer of accountability, and
- the risk during machinery-of-government changes.

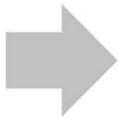
We identified security vulnerabilities in the control systems and issued management letters to PTV, seeking assurance that security risks had been identified and assessed. We also gave written information to relevant ministers and a department head under section 16F of the *Audit Act 1994*. As required under this section, we also notified the Premier.

During our audit, PTV started to address the issues that we identified.

Governance of control systems



PTV has not developed adequate governance arrangements to help train operators manage risks to their control systems



limited cyber security frameworks within PTV and the train operators



unclear ownership, roles and responsibilities.

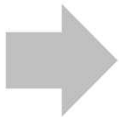
PTV has not developed adequate governance arrangements to help train operators manage risks to their control systems. This has resulted in limited cyber security frameworks within both PTV and the train operators, as well as unclear ownership, roles and responsibilities.

Governance of control systems

7



PTV has not identified, prioritised or managed emerging risks to essential train services and vulnerabilities of the control systems



No strategy for setting minimum security requirements



Inadequate processes for managing risk and compliance

PTV has not identified, prioritised or managed emerging risks to Victoria's essential train services and vulnerabilities of the control systems. As a result, there is no strategy for setting minimum security requirements, and the processes for managing risk and compliance are inadequate.

Security frameworks for control systems

8



Train operators do not have the necessary security frameworks to safeguard the control systems



PTV has not coordinated the train operators or provided them with guidance about security frameworks.

Train operators do not have the necessary security frameworks in place to safeguard the control systems that manage and monitor train services. And, PTV has not coordinated the train operators or provided them with guidance about security frameworks.

Cyber security controls



Train operators have limited controls to detect and respond to cyber security incidents.



PTV and the train operators have recognised these weaknesses and are working together to address them.

Train operators are missing the proper controls to secure their control systems. They have only limited controls to detect and respond to cyber security incidents.

PTV and the train operators have recognised these weaknesses and are working together to address them.

Recommendations

10



PTV to provide leadership and establish governance arrangements



Train operators to improve the security of control systems



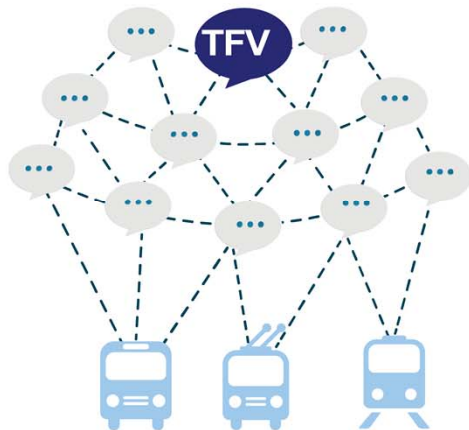
DEDJTR to establish processes for transferring responsibility during machinery-of-government changes

We made nine recommendations directed to PTV and one recommendation directed to DEDJTR. We recommended:

- that PTV provide leadership and establish governance arrangements to train operators for managing risks to control systems security
- that train operators improve the security of control systems to enable them to effectively respond to cyber threats
- that DEDJTR establish appropriate processes to manage the transfer of responsibility of recommendations during machinery-of-government changes.

PTV has provided a detailed action plan on how it has commenced addressing our recommendations and the time frames required to complete these activities.

Looking ahead



New agency—Transport for Victoria (TFV)—will have overarching responsibility for transport across Victoria.

DEDJTR has committed to establishing appropriate processes to manage the transfer of recommendations.

In June 2016, the Victorian Government announced the establishment of a new agency called Transport for Victoria (TFV). TFV will have overarching responsibility for transport across Victoria. In anticipation of the establishment of TFV, DEDJTR has committed to establishing appropriate processes to manage the transfer of accountability and responsibility for audit recommendations.

For further information, please view the full report on
our website: www.audit.vic.gov.au

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