

**Arizona State University  
T2 Parking Management Agreement  
Audit Report  
March 15, 2017**

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**Summary**

The T2 Parking Management Agreement audit was included in the Arizona State University (ASU) FY2017 audit plan approved by the Arizona Board of Regents (ABOR) Audit Committee and ASU senior leadership. The audit focused on compliance with the operational, financial and security provisions and activities covered in the agreement. This audit is in support of ASU's mission of effective management of financial resources and focus on efficient operations of all levels of the University.

**Background:** ASU entered into a contract with T2 Systems Inc. (T2) for the Parking Access and Revenue Control System (PARCS) effective May 2014. PARCS is a hosted application through T2. The system allows for the parking garage exit gates to be managed in an automated manner removing the need to have a cashier at each of the exit lanes. The PARCS system has been implemented in all parking garages on the Tempe campus in addition to the University Center structure on the Downtown campus. The system was implemented in a phased approach from May 2014 through August 2016. Parking revenue of \$3.4 million was processed through the PARCS system over the 12 month period ending December 2016, of which approximately 96% was card payments and 4% was cash payments.

As the service provider, T2 is responsible for the design, procurement, installation, maintenance, service, security, support and life-cycle management of the PARCS system in addition to acting as the merchant for payment card purposes. Contractually, PARCS was implemented without reliance on ASU IT infrastructure, therefore transferring Payment Card Industry Data Security Standard (PCI-DSS) scope and ownership of compliance to T2. T2 is contracted with Vantiv, a leading payment card processor, to process and settle all payment card activity.

ASU Parking and Transit Services (PTS) is responsible for providing customer service support within the parking garages utilizing the PARCS system as well as the operational support for cash collections, reconciliation of both cash and card payments including recording the related revenue and the overall administration of PARCS access related to ASU employees.

**Audit Objectives:** The objectives of the engagement were to assess compliance to the key financial, operational and security provisions included in the contract. In addition, the cash collection controls and reconciliation processes related to the PARCS system were assessed from a design and effectiveness perspective.

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**Scope:** The scope of this engagement included review of key contractual requirements in addition to the related financial/cash handling processes implemented in support of the PARCS system. This review did not assess the effectiveness of the T2 controls related to the hosted environment.

**Methodology:** Our audit consisted of tests and procedures necessary to provide a reasonable basis for expressing our opinion. Specifically, audit work consisted of interviews with the ASU PTS organization and T2, observation of work processes, review of documented policies and procedures and substantive tests including the following areas:

- Validating contractual payments were made with appropriate supporting documentation and required approval.
- Reviewing security attestations from T2 including the SSAE 16 SOC 1 related to the physical data center and PCI certifications.
- Mapping the security provisions included in the contract to internal T2 policies and procedures.
- Validating the accuracy and completeness of the cash collection processes through re-performing the cash validation process for a sample of 15 days.
- Observing cash handling procedures.
- Validating the accuracy and completeness of payment card transactions including the 3-way match between PARCS, Vantiv and cash for a sample of 15 days.
- Validating the accuracy of the monthly revenue, expense and in-transit items for a sample of 3 months.
- Performing analytic procedures over transactional data focused on various exception codes.
- Assessing ASU controlled access related to the PARCS system.

**Conclusion:** Overall, PTS and T2 were generally in compliance with the key provisions of the contract. PTS has also implemented robust controls over the reconciliation and settlement of parking transactions involving both card and cash payments in addition to effective cash handling processes. Specifically, PTS has implemented a 3-way reconciliation process to validate all payment card transactions between the PARCS system, Vantiv and the bank account. In addition, effective cash handling processes have been implemented which include dual controls over cash collection and appropriate segregation of duties between collection and reconciliation. Opportunities for improvement exist around vendor oversight, access management and exception monitoring.

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PTS has not implemented adequate vendor management controls in regards to the T2 agreement. Specifically, the contract allows for ASU and T2 to jointly determine a reasonable, competitive payment card processing fee six months after the initial installation of the first facility; however, this review has not been performed. As a result, ASU is potentially paying higher than needed processing fee rates.

Logical access to the PARCS system is not appropriately restricted. PTS is responsible for managing access to the PARCS system; however, testing indicated that approximately 24% of the active user accounts were tied to terminated employees or employees that have transitioned roles and no longer required access. It was also noted that although role based access is available, it has not been effectively implemented.

In addition, while management has implemented robust financial transaction processes, formalized exception monitoring of transactional activity is not occurring. Transaction logs exist; however, overall analysis and use of the data to identify potential issues or fraud is not occurring. Approximately 6% of the transaction volume is associated with an exception based activity.

It was also noted as part of the review that there is not adequate vendor oversight over T2, a cloud based service provider. Specifically, ongoing monitoring to ensure T2 is compliant with the defined security provisions in the contract is not occurring. University Audit is coordinating with Information Security and Procurement to ensure existing processes are updated to give adequate visibility and awareness to the increased risk and related monitoring required for cloud based vendors at an overall University level.

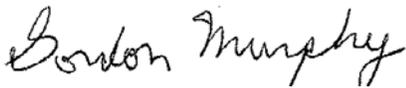
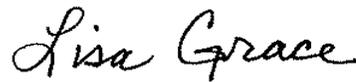
The control standards we considered during this audit and the status of the related control environment are provided in the following table.

<b>General Control Standard</b> (The bulleted items are internal control objectives that apply to the general control standards, and will differ for each audit.)	<b>Control Environment</b>	<b>Finding No.</b>	<b>Page No.</b>
<b>Reliability and Integrity of Financial and Operational Information</b>			
<ul style="list-style-type: none"> <li>• Contractual payments are made with appropriate support and approval.</li> </ul>	Reasonable to Strong Controls in Place	NA	NA
<ul style="list-style-type: none"> <li>• Reconciliations are performed to confirm settlement of payment card transactions and in-transit amounts for both payment card and cash transactions.</li> </ul>	Reasonable to Strong Controls in Place	NA	NA

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<ul style="list-style-type: none"> <li>Monthly revenue and expense amounts are recorded in a timely and accurate manner.</li> </ul>	Reasonable to Strong Controls in Place	NA	NA
<b>Effectiveness and Efficiency of Operations</b>			
<ul style="list-style-type: none"> <li>Effective vendor management and oversight is in place to manage the terms of the contract.</li> </ul>	Opportunity for Improvement	1	5
<ul style="list-style-type: none"> <li>Exception monitoring is in place to ensure that potential issue or fraudulent trends are identified and investigated.</li> </ul>	Opportunity for Improvement	3	7
<b>Safeguarding of Assets</b>			
<ul style="list-style-type: none"> <li>Effective cash handling processes exist and are being followed.</li> </ul>	Reasonable to Strong Controls in Place	NA	NA
<ul style="list-style-type: none"> <li>Access to PARCS is appropriately restricted.</li> </ul>	Opportunity for Improvement	2	6
<b>Compliance with Laws and Regulations</b>	N/A		

We appreciate the assistance of Parking and Transit Services and T2 representatives during the audit.


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Gordon Murphy, CPA, CFE, CGMA  
Internal Auditor Senior

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Lisa Grace, CPA, CIA, CISA, CISSP  
Executive Director

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**Audit Results, Recommendations, and Responses**

**1. PTS has not performed a review of the payment card processing fees currently being charged for the PARCS transactions resulting in ASU paying a higher processing fee.**

**Condition:** PTS management has not performed the six month review of payment card processing fees to ensure processing fees are appropriate for ASU's volume as allowed by the T2 contract.

**Criteria:** Exhibit B of the contract states that at the conclusion of the six month period following the first installation, T2 and ASU will examine the processing costs based on volume and determine a reasonable, competitive transaction fee to then be applied to all subsequent payment card transactions.

**Cause:** PTS and T2 have not performed the review to ensure processing fees charged by T2 are competitively priced.

**Effect:** ASU is currently paying on average a processing fee rate of 6.3%. Based on industry research, the average payment card processing fee is between 3-3.5%. Based on 2016 payment card volume processed through PARCS, a potential annual savings of approximately \$100,000 exists factoring in a 3% fee reduction.

**Recommendation:** PTS should request the allowable review of the payment card processing fees and jointly agree on the appropriate rate.

**Management Response:** PTS met with T2 to ensure an appropriate rate is being charged to ASU. With regard to the processing fees that T2 charges ASU; \$ 0.11 + 5% for each transaction, those fees cover more than traditional payment card processing. The fees indicated above include the following:

- T2 provides a Level 1 certified merchant processing environment. As they are the merchant of record for ASU, the processing environment for parking exists in that environment as well. That is not something a traditional payment processor could provide to ASU if used to process our transactions.
- As T2 is the merchant of record, T2 carries the majority of PCI compliance and the maintenance of that compliance for the duration of the contract. If ASU had elected to go with a traditional processor to gain lower processing rates, the cost for PCI compliance would completely be borne by ASU.

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- The fees also cover the transfer of funds from the banks as the payment card fees are authorized then paid by the payment carriers. Included in this is the audit processes that T2 performs to confirm accuracy of transactions and banking transfer.

The fee structure in place with ASU covers far more than simply managing a payment card payment. PTS has requested further breakdown of the reported fees that average 6.3%, which we understand fluctuates based on volume, and will perform an assessment of the fees being charged to ensure it is considered appropriate and competitive for the services provided. This review will be completed by June 30, 2017.

**2. Effective access controls are not in place to appropriately restrict access to the PARCS system.**

**Condition:** Access to the PARCS system is not appropriately restricted. Specifically, 68 of the 279 (24%) user accounts managed by ASU were related to terminated employees or employees that had transferred roles and no longer needed access.

In addition, it was noted that although role based access is available, it has not been effectively implemented.

**Criteria:** According to the Access to University Technology Resources Standard, each department is responsible to disable access to departmentally controlled resources upon either a transfer or termination.

**Cause:** PTS has not implemented formal access management processes. As a result, they are not consistently notified when employees are terminated or change positions, nor is this being detected through periodic access reviews.

Role based access was implemented when it became available; however, the implementation did not take into account existing access already established through specific privileges. As a result, 73% of user accounts are assigned defined roles plus additional privileges.

**Effect:** Access to the PARCS system is not appropriately restricted which may result in inappropriate or unauthorized access or changes to the PARCS system and data. This is further compounded by PARCS being a hosted solution, which does not require ASU credentials to access.

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Additionally, the heavy use of “additional privileges” negates the security and efficiency benefits associated with implementing role based access.

**Recommendation:** PTS should perform a full comprehensive access review of existing active users in addition to ongoing periodic access reviews. The exceptions noted in this issue were the result of high level audit procedures and do not constitute a full access review. Follow up should also be performed with the appropriate departments to ensure that appropriate visibility exists for terminated and transferred employees.

In addition, management should review existing role based access to determine an efficient way to remove the unnecessary individual privileges assigned.

**Management Response:** In response to these findings, PTS conducted an internal review in December 2016 and deactivated all terminated employees. More formulized procedures will be implemented by June 30, 2017 to include working with our campus partners (e.g. ASU PD, Help Desk/Call center) on communications with exiting employees and to establish a quarterly review of all accounts and an annual review of account access.

The Strategic Management and Support area within PTS will be responsible for implementing and monitoring this moving forward.

**3. Management has not implemented monitoring procedures to ensure that exception transactions are reviewed to identify potential issues or fraud.**

**Condition:** Management has not implemented effective monitoring controls over the PARCS transactional data. Transaction logs exist and management does utilize the detail to research specific problem instances; however, overall analysis and use of the data to identify potential issues or fraud is not occurring.

**Criteria:** Individuals using the garage must present a valid parking permit for the structure or take a ticket from the reader located at the entrance. The PARCS system will capture the details of the event which is subject to predefined rules on how transactions are expected to occur related to permits and tickets. If there are exceptions to the transaction sequence, the gate will not release and a member of the ASU Parking and Transit Services (PTS) Customer Service Support team handles the exception over an intercom and will manually release the gate when resolved. The system logs the activity through predefined reason codes so analysis can be performed to identify potential issues or fraud that is occurring.

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**Cause:** Management utilizes the logs for problem resolution as needed; however, they have not yet implemented proactive monitoring of the transactional data to identify potential issues or fraud occurring with the automated system.

**Effect:** Potential ongoing issues or fraud may go unnoticed resulting in ASU losing parking revenue. Approximately 6% of the transaction volume is associated with an exception based activity.

**Recommendation:** PTS should implement analytical procedures utilizing the transaction logs to identify potential issues or fraud.

**Management Response:** PTS will establish the recommended procedure by the end of this quarter (March 30, 2017). This will become the responsibility of the overnight supervisor position, currently in the process of hiring.

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