

Amadeus Revenue Integrity is looking for computer science students to fill three internships for summer 2016.

The contact person at Amadeus is Wendi Kasparian  
Revenue Integrity Center of Excellence,  
[wendi.kasparian@amadeusri.com](mailto:wendi.kasparian@amadeusri.com), [www.amadeus.com](http://www.amadeus.com).



**Amadeus Tucson**

**Operations  
Internship Assignments**

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## Document control

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## Summary

This document is a list of potential tasks suitable to successful candidates to the Amadeus Intern program. Each task must achieve the dual goal of (a) being a challenging, satisfying stand-alone task that is achievable by some with limited knowledge of Amadeus Internal structures and (b) delivers a usable document, tool or method that delivers ongoing value to the organization.

As the task forms part of a learning opportunity, the method and tools are left flexible within a certain broad framework. Each task is described with the principle objective, what a successful completion looks like, the type of skills that would be exercised and an expected time frame.

It is important to note that any work, product or intellectual property generated by participation in this program remains the exclusive property of Amadeus.

## Task #1: Server Status

### Introduction

Managing the dynamic hardware landscape of a data centre has as a foundation an accurate CMDB (configuration management database). This task is to investigate, and demonstrate a proof of concept for a fully automated open-source discovery tool. The tool should, using trusted credentials discover a set of system characteristics that can be used to fully or partially populate such a CMDB.

### Objective

A tool or package that with appropriate credentials can query all of the servers (virtual or otherwise), possibly extend to hosts/storage/network equipment. This tool should gather into a staging database all available configuration data. The tool should keep an audit trail for all database updates. The tool should allow graphical reporting. The tool should allow for manual updates. The tool should fail-safe, and report its own health. The tool should report on absent configuration items (i.e. items found in a previous run, but no longer found)

### Successful Completion

A tool that shows the total number of found configuration items and tree-like allow a drill-down to display how many of each server model, how many of each O/S, how many have dual NIC, how many have 7200 RPM local disk, and how many have local storage that is 75% full (actual percentage should be configurable).

### Skill Profile

This section indicates which skills the candidate will bring, or develop over the course of the task.

To achieve this task, the successful candidate will need advanced ITIL proficiency, they will need to be comfortable with concepts like Operating systems, virtualization, ETL (extract, transform, and load). They will need basic scripting (i.e. powershell, BASH etc.), basic project management, moderate/advanced database management.

### Time Frame

3-6 months at ca. 40% (2 full days/week or equivalent)

## Task #2 Linux Patch Management

### Introduction

Amadeus Revenue Integrity, in building synergies with other corporate units will possibly deploy more and more servers using a Linux distribution. At present there is no automated patch analysis, management and implementation. At present there are no production instances (other than appliances, which are out of scope), thus this is an operational positioning task.

### Objective

Gather from stakeholders all operational requirements. Investigate open-source solutions. Write a report comparing various options and make a recommendation. In the course of your research, build and use an isolated virtual environment to include operational data/usability.

### Successful Completion

A document comparing at least 3 solutions (i.e. different packages), and including (a) comment regarding which distributions are supported, (b) history of development of solution, (c) known large users, if any (d) suitability for PCI/DSS certification, (e) data regarding the operability of the solution and finally (f) a recommendation.

### Skill Profile

These section indicates which skills the candidate will bring, or develop over the course of the task.

To achieve this task, the successful candidate will need advanced Linux proficiency (multiple distributions), they will need moderate/advanced project management skills, moderate report writing skills, and beginning virtualization (vmware) skills.

### Time Frame

3 months at ca. 40% (2 full days/week or equivalent)

## Task #3 Operations – Workflow analysis

### Introduction

With customers all over the world, and to deliver the service expected by our customers Amadeus Revenue Integrity operates a 24X7 team of operations staff to monitor and be first responder to any incident. To promote efficiency it is key that the response to any system alarm or event must be handled in a consistent manner. This involves an analysis of an event, identifying the source, the trigger and the most effective response. Then documenting the response into a consistent “operational procedure”... Once the procedure is written, reviewed, and published then the event or alarm should be updated to direct responders to the now numbered OPROC. While not a complex task, there are multiple opportunities, each unique. This is operational management and documentation task.

### Objective

For any alert/alarm/monitor message, identify if an existing procedure covers the specific case, and where not – initiate an investigation to the source, and trigger of the event. Consult with Network Operations and System Engineers (possibly Applications development) to draft the most appropriate response to the event and create a new, numbered, OPROC. Have the OPROC reviewed (and tested) and update the alert to refer to the ORPOC.

### Successful Completion

Blah blah

### Skill Profile

These section indicates which skills the candidate will bring, or develop over the course of the task.

To achieve this task, the successful candidate will need advanced Linux proficiency (multiple distributions), they will need moderate/advanced project management skills, moderate report writing skills, and beginning virtualization (vmware) skills.

### Time Frame

3 months at ca. 40% (2 full days/week or equivalent)

## Task #4 Operations – Finalize Server Deployment

### Introduction

Amadeus Revenue Integrity operates a dynamic compute platform. A frequently recurring task being the deployment of a new server instance. This may be triggered by a variety of factors like our changing customer base, changing requirements of existing customers, technology upgrades of existing equipment. Being a frequent task a lot of effort has gone into streamlining it, however it has been identified that the post build customization step can be further automated. This is a scripting task.

### Objective

Work with current system engineers to document the post build customization steps and prepare a fail-safe, efficient script (powershell preferred) to automate this step to bring the server to the point just prior to application load. The script should record/store an audit trail of activity, and include options to fall-back, or recover/restart after an interruption. The script should be fully documented.

### Successful Completion

A piece of code that can be executed on a server to complete the commissioning phase. The script should be completely documented.

### Skill Profile

These section indicates which skills the candidate will bring, or develop over the course of the task.

To achieve this task, the successful candidate will need moderate to advanced O/S skills (Windows), advanced scripting skills (powershell preferred), moderate coding/testing skills.

### Time Frame

3 months at ca. 40% (2 full days/week or equivalent)

## Task #5 Operations – Network Documentation

### Introduction

Amadeus Revenue Integrity maintains high available communication links and networking connectivity – both external (between customers) and internal (components of the data center). With a highly dynamic data center, maintaining accurate network diagrams and documentation is crucial to continuous operations. There is a need to continuously review this documentation. This task is two-fold, firstly to perform a review, including updating the documentation and secondly to investigate the features and viability of open-source automatic discovery tools and network mapping automation packages.

### Objective

Work with the Network Operations and the System Engineering teams to review the existing documentation including “walk-the-walk”, and as needed performing eyeball check that the existing documentation is accurate – any inaccuracies should result in a documentation update. Once completed, investigate and report on the availability and maturity of open-source network discovery and mapping tools. This is a documentation/analysis task.

### Successful Completion

Existing documentation piece of code that can be executed on a server to complete the commissioning phase. The script should be completely documented.

### Skill Profile

This section indicates which skills the candidate will bring, or develop over the course of the task.

To achieve this task, the successful candidate will need moderate to advanced O/S skills (Windows), advanced scripting skills (powershell preferred), moderate coding/testing skills.

### Time Frame

3 months at ca. 40% (2 full days/week or equivalent)

Mapping Network ports to switch/cable. Create / Update Network Diagrams using MS Visio