Planning, Creation, Integration And Implementation Of A Tablet Based Digital Class Review System

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ABSTRACT

Understanding The Need Of Digital Infrastructure

Brief Overview

What We Will Discuss

Project Planning

Hardware Requirements

Software Requirements

Security

Image Creation

Implementation

Benefits To The Organization

PROJECT PLAN

Discovering What Is Required To Achieve Successful
Implementation

Create a Team

Identify Talent Requirements

Determine Primary Stakeholders

Encourage Management Support Of The Project

Record Client Needs

Determine The Project Needs Versus Wants

Identify The Feasibility Of Each Requirement

Provide Alternative Options If Certain Requirements Are Not Possible

Project Scope / Goals / Deliverables

Create A Proposal That Indicates The Primary Needs

Specify Which Deliverables Will Be Included At Project Completion

Confirm Any Soft Goals Or Features That Might Be Implemented If Time / Scope Allows

HARDWARE REQUIREMENTS

Identify Hardware Requirements

Ensure Currently Implemented Server Software, Imaging Software, And Network Infrastructure Will Be Compatible With The Proposed Project Devices

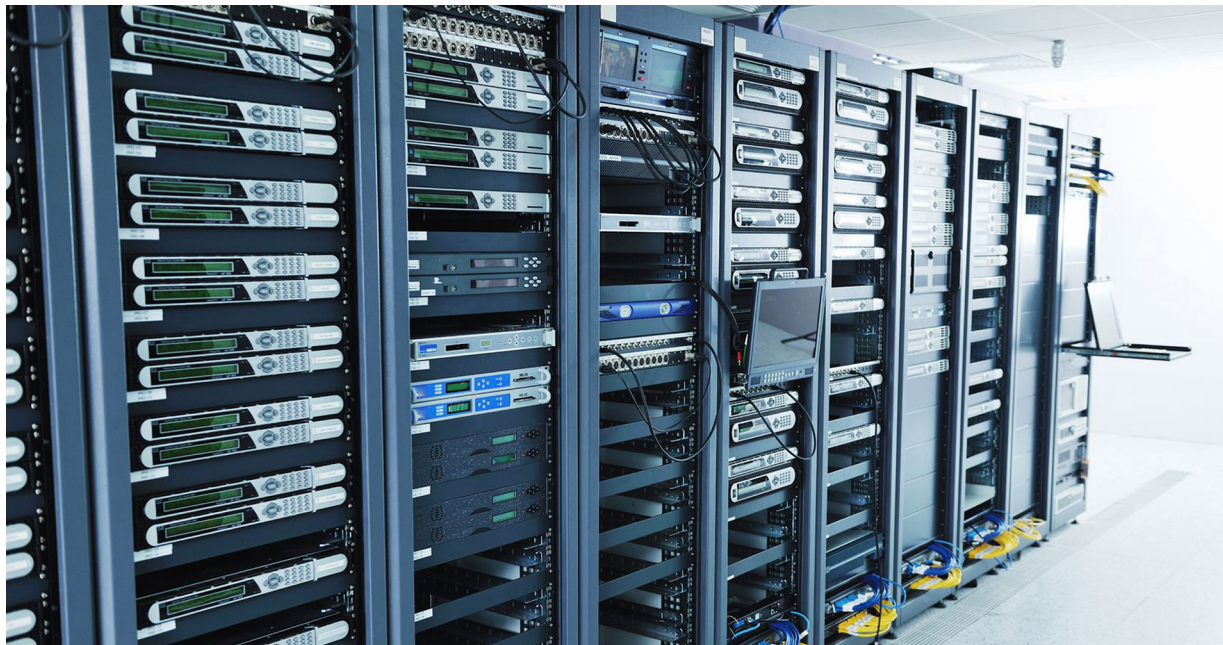Acquire Evaluation Units Of All Proposed Devices Needed

Confirm That The Hardware Acquired Works As Needed

INFRASTRUCTURE HARDWARE REQUIREMENTS

Server And Network Needs For Management And Maintenance

Server Requirements

Server Infrastructure Needs:

Virtual Or Physical Server Configurations Will Suffice

Server Hardware To Meet Requirements For SCCM 2012

At Least Dual Core Preferably Quad Core Or Better

At Least 4GB Memory With 8GB Or More Preferable

Multiple Hard Drive Arrays Configured For The Storage Of OS, Configuration Manager, SQL Database, And SQL Logs

Network Requirements

Network Infrastructure Needs

Pre-existing Network For Wired And Wireless Connectivity

ACL And Firewall Control To Allow PXE Imaging Connectivity

Remote Desktop Support For Quick Server Management

IP Helper Tables To Direct PXE Traffic To SCCM Server

DEVICE HARDWARE REQUIREMENTS

Tablet And Peripheral Purchase Planning

Dell Venue 5830 Tablet

Features Include

8.1" LCD Screen

2GB DDR3 Memory

16GB SSD Storage

PXE Boot Support

Bluetooth

Wi-Fi A/B/G/N Compatible

TPM / Bitlocker Encryption

Micro SD Support Up To 128GB

Additional Device Hardware

Further Required Hardware Includes:

USB 2.0 Gigabit Ethernet Adapter
(Model SM7500)

USB 2.0 Four Port Hub
(Root or Externally Powered)

USB Micro Cable-To-Go Adapter

USB Keyboard / Mouse Input
Devices As Needed

**USB 3.0 Devices Would Not
Function Due To Driver
Requirements And A Lack Of BIOS
Support**

Tablet Cart

Built By Ergotron The Tablet Management Cart 48 With ISI Contains:

48 Slots With The Dimensions Of 7.9"H x 11.3"D x 0.85"W Or 20 x 28.8 x 2.2cm

Support For iPad, Android, or Windows Based Tablets

Charging Support Up To 2.1A Per Device

Locking Tray Doors

USB Sync Port For IOS And Android Devices

Hardware Quote Acquisition

Request Hardware Quotes From Several Hardware Vendors Including Direct Purchase Manufactures

Acquire Evaluation Units If Possible To Determine Functional Goals

Work With Pre-Existing Vendors To Achieve The Best Possible After Support

Confirm PXE Boot Support Before Making Any Order

Order The Required Compatible USB Network Adapters At The Same Time As The Evaluation Units

DELL

lenovo

acer

msi®

TOSHIBA

ASUS®

hp

SOFTWARE REQUIREMENTS

Identify Software Requirements

Confirm Windows, Office, And Anti-Virus Software Licensing For Use With The Desired Tablets

Take Note Of Server Software Requirements To Image Windows 8, 8.1, and 10 Devices

Update Any Systems To Meet Device Software Requirements

Software Licensing

Windows Server 2012

Microsoft® System Center Configuration Manager 2012

Windows 8.1

DHCP

Microsoft Active Directory

PXE

DNS Domain Name System

IIS

Software Requirements:

SCCM 2012 R2

Windows Server 2012 R2

Appropriate Per Device MAK or VLK Windows Licensing

Configuration Of The Following:

DHCP
Active Directory
PXE
DNS
IIS

MANAGING SECURITY

Identifying Potential Issues And Creating Countermeasures

Identify Security Concerns

Software Security:

User Interface Modification
Prevention

Software Installation
Restrictions

User Profile Lockdown
Requirements

Network Security:

AD User Authentication

Wi-Fi Authentication

Automatic Login Potential

Intranet Access Restrictions

Physical Security:

Tablet Cart Storage
Tablet Theft Prevention

SOFTWARE SECURITY

Customizing And Locking The User Interface

Customizing the User Interface

Group Policy Was Utilized For The Following:

Custom Desktop Icons

Forced Background Picture

User Access Restrictions For:
Control Panel, Run, Settings
Charm, Right Click, Task Manager,
Command Prompt, Local Admin,
Network Browsing, Program
Settings, And Pretty Much
Anything Else That Could Get A
User Into Trouble
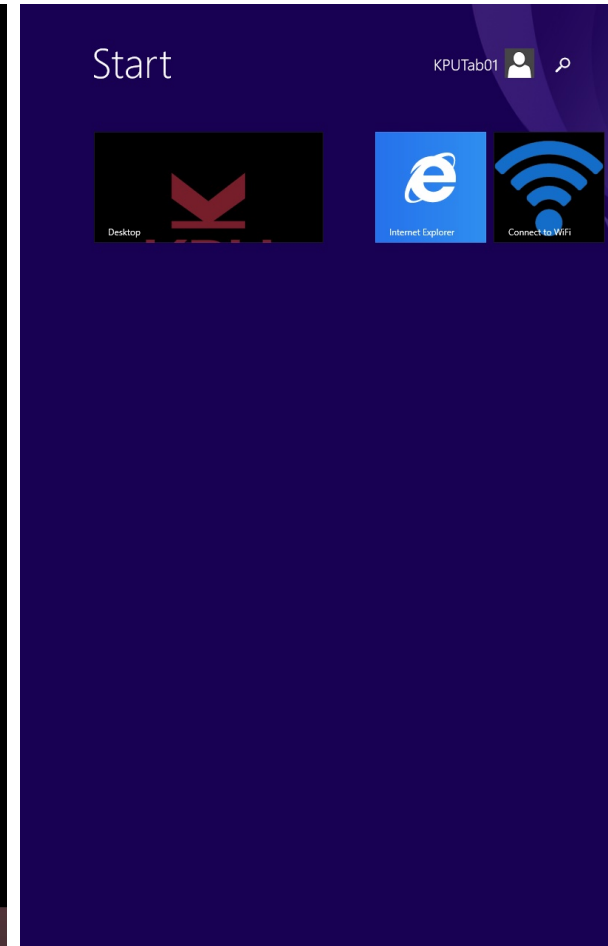
Further Customizations

Any Modifications That Were Not Possible Through GPO's Were Completed Through The Use Of VB And PowerShell Scripts.

These Include:

User Profile File Cleanup

User Wi-Fi Cached Credential Cleanup

Custom Start Screen Icon Creation

Unwanted User Profile Icon Removal

NETWORK SECURITY

Identifying And Managing Network Authentication

User Authentication

Active Directory User Created With Extremely Limited Access

Automatic PC Login Configured

Intranet Access Restricted To Prevent Any Internal Network Browsing

Wi-Fi Authentication Required To Authenticate A Specific User to Each Tablet

Cached Wireless Passwords And Stored User Data Are Deleted Automatically At Login

A Default Wi-Fi AP Was Configured To Prompt For User Credentials At Start Up

PHYSICAL SECURITY

Managing Hardware Resource Security

Physical Access Security

Methods to Increase Security:

Locking Doors On Tablet Cart

After Hours Storage Location Is Locked and Monitored

Utilizing The Tablets Requires Authorization Of Specific Department

Tablets, Carts, And Keys Are All Labeled And Tracked

Institution Members Are Trained On How To Report Theft Or Damage

TABLET CONFIGURATION

Working With Evaluation Units, And Preparing The Image

Preparing The Tablet

Tasks to Complete:

Install The Desired Windows RTM Or Enterprise Version As A Clean Installation

Apply Drivers

Configure Default User Profile

Add Any Required Executables Needed For Scripting And Deployment

Remove Any Local Users, And Run Sysprep With The Generalize Option Enabled
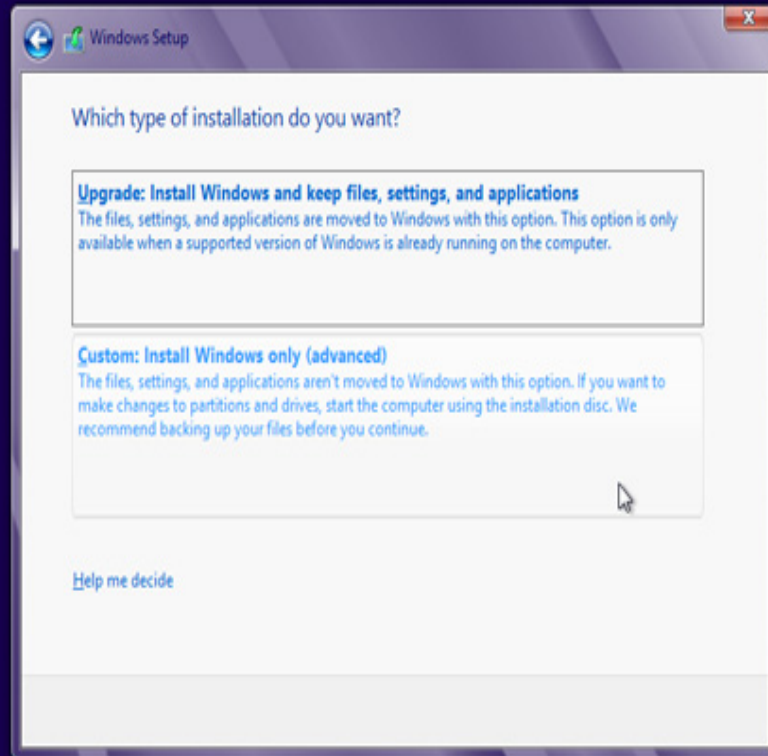
Creating The WinPE Environment

Required Steps:

Collect The Touch Screen And USB Ethernet Drivers For WinPE

Copy A Boot.wim File From The SCCM Sever

Using The Windows ADK Inject the Collected Drivers Into The Boot Image

Inject Any Additional Executables For Scripting Needs

Save The Boot.wim File And Create A Bootable Image

Capturing The Image

Once The Tablet Has Completed The Sysprep Procedure An Image Can Be Captured By Utilizing A Bootable Windows PE USB Stick

Run The Following Command Line In WinPE

dism /Capture-Image /ImageFile:<DestDriveLtr>:\Image.wim /CaptureDir:<SourceDriveLtr>:\ /Name:"Image Name"

Or By Utilizing An SCCM Task Sequence

PXE Boot The Configured System Then

Select The Task Sequence Built For Image Capture

Please Note That This Will Need To Be Configured Beforehand

Configure SCCM

SCCM Setup Requirements:

Create A Device Collection

Enable PXE Connectivity Options

Configure Firewall / ACL Rules To Allow PXE Imaging

Import Required Drivers Into A New Package

Import The Captured Windows Image

Distribute The Content To Required Distribution Points

Create A Task Sequence For Image Distribution

Creating a Task Sequence

Windows8_1_x86 Dell5830 Tablet Task Sequence Editor

Add ▾ | Remove

Properties | Options

- **Install Operating System**
  - Partition Disk 0 - UEFI
  - Launch OSK
  - Rename Computer
  - Apply Operating System
  - Apply Windows Settings
  - Apply Network Settings
  - Apply Device Drivers
- **Setup Operating System**
  - Setup Windows and Configuration
  - Restart Computer
- **Install Application**
  - Set KMS Activation
  - Activate Against KMS
  - Copy DesktopTools Folder
  - Copy All User Start Items
  - Cache User Credential
  - Configure Auto Login
  - Restart Computer

Type: Group

Name: Install Operating System

Description: Actions to run in Windows PE to install and configure the image

No settings are required for this action.

OK | Cancel | Apply

Create Tasks That Will:

Partition Drive With GPT Formatting And UEFI Support

Name The PC

Apply The Windows Image

Join To The Domain

Apply The Configuration Manger Client

Install Required Application And Activate Software

Copy Required Startup Scripts

Imaging The Tablet

Tablet Setup Needs:

Configure The Tablet To Boot To PXE

Boot Into Imaging Environment

Select The Prepared Task Sequence

Monitor Image Process And Confirm Completion Without Error

Begin Testing And Making Iterative Changes As Needed

Microsoft | Solution Accelerators

Installation Progress

IT Organization
Running: Lite Touch Installation

Running action: Install Operating System

[30 %] Applying progress: 1:48 mins remaining
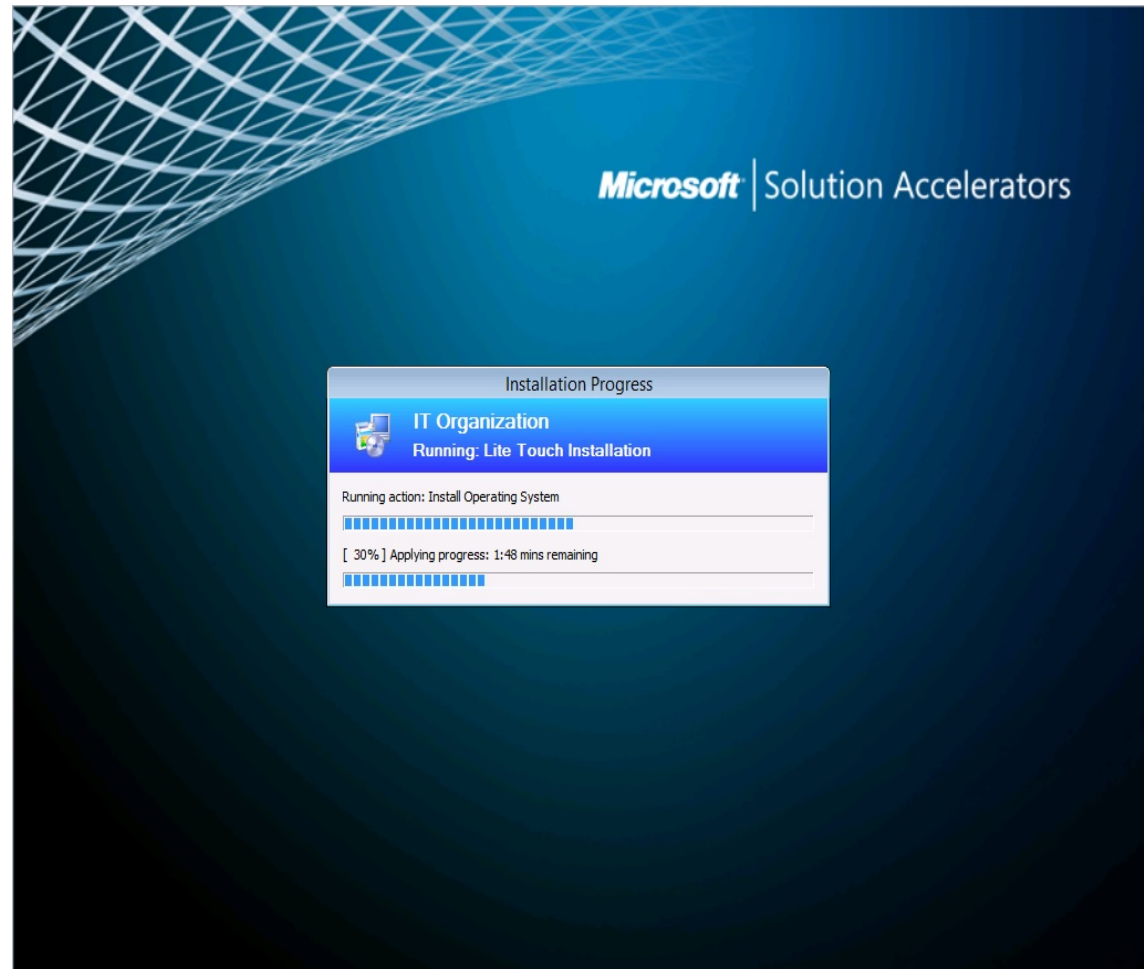
PILOT TESTING

Real World Testing

Project Pilot Testing

Task List Includes:

Prepare Enough Devices For A Pilot Test

Work With Several Test Groups To Identify Any Unforeseen User Issues, Many Tests May Be Required

Correct Any Functional Problems

Communicate With Stakeholders About Any Issues That Are Beyond The Agreed Project Scope

Resolve Any Further Extended Issues That Directly Impact Project Success

Final Steps

Make The Final Changes To The Image File And Task Sequence

Deploy The Final Image To All Hardware

Create All Required Documentation For Device Management

Begin Formal Usage Training With Staff

Determine An Update And Replacement Strategy

POTENTIAL BENEFITS

Green initiative And Man-Hour Reduction

Organizational Benefits

Shrinking Of Our Carbon Footprint Due To A Significant Reduction In Paper Usage

Decrease In Human Hours Needed To Process Class Review Data

Providing A Stepping Stone For BYOD (Bring Your Own Device)

Better Data Integrity Due To Reduction Of Manual Data Entry

Allowing For Real Time Result Review

THANK YOU FOR YOUR TIME

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