Qlik | Qonnections
Global Partner Summit 2015

10th Annual

Advanced QlikView Management Service API Usage

Jeff Goldberg & Jacob Vinzent

28 April, 2015

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Your Hosts for Today

Jeff Goldberg

- Senior Enterprise Architect
- Integration, Security, Deployment
- Qlik OEM Solution Architect 2013-2015
- I like to figure out how to make software do what I want.

Jacob Vinzent

- Senior Enterprise Architect
- Integration, Security, APIs
- Been 2 years with Qlik
- Came from the cloud industry
- Like to understand what Jeff tries to do with the software

Agenda

- A story about an admin and his opportunity to automate
- Background
  - What is it and what does it do?
- General use cases
- How our hero achieves his goals
- Conclusion

So there's this admin…

- He's constantly going into the QlikView® Management Console.
  - He's always provisioning users
  - Kicking off tasks when data warehouse jobs finish
  - Manually creating distributions of smaller data set apps for his customers
- What he wants to do…
  - Pass along QlikView user provisioning to the helpdesk
  - Sleep late instead of waking early to kick off reloads
  - Enable users to create new application data sets on the fly
  - Not being a bottleneck
  - Avoid Shadow IT in his organization

QRS API!

Background

- What is the QMS API?
  - QMS stands for QlikView Management Service
  - A web service to control all aspects of the QlikView Management Console (QMC)
- What can you do with the QMS API?
  - Use it to provision users to a QlikView document
  - Create a new tasks
  - Set up tenants in a QlikView deployment
  - Execute QlikView tasks using event driven execution (EDX)
  - And a whole lot more!
- What does QMS API require?
  - .Net 4.0 & Visual Studio
  - Connectivity to the server running the QMC

Use Cases

- In the enterprise
  - User and group provisioning on documents and distribution tasks
  - Triggered execution based on an event (system or user driven)
  - Provide an internal SaaS service to the organization

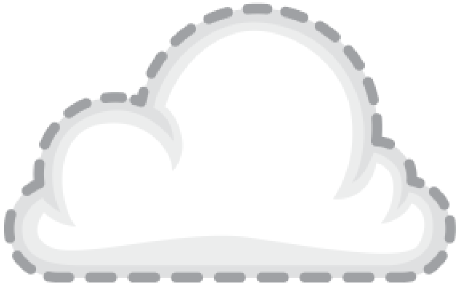
- In OEM
  - Host application integration to drive tenant administration of users and tasks
  - Provision the reporting capabilities together with the base solution

Back to Our Admin

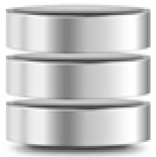
- Build a .Net app for an OEM solution provisioning
  - One app for each customer
  - Control the security via Ticket login
  - Make sure that the app is reloaded just after it is provisioned and after there on a regular basis

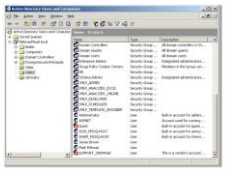
Image source. Google

QlikView in the Cloud Sign-up



End user sign-up





Customer DB

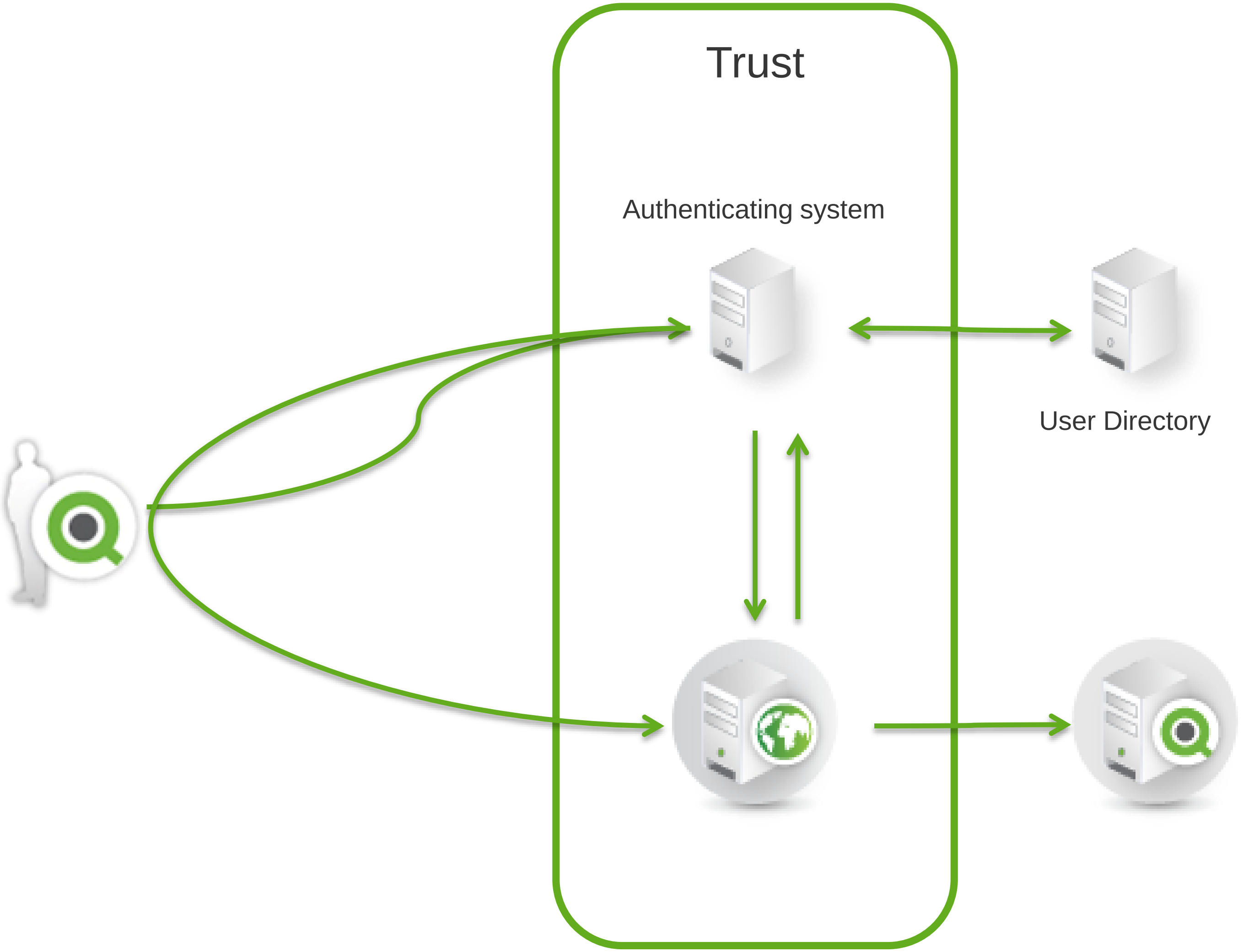
Management

AD

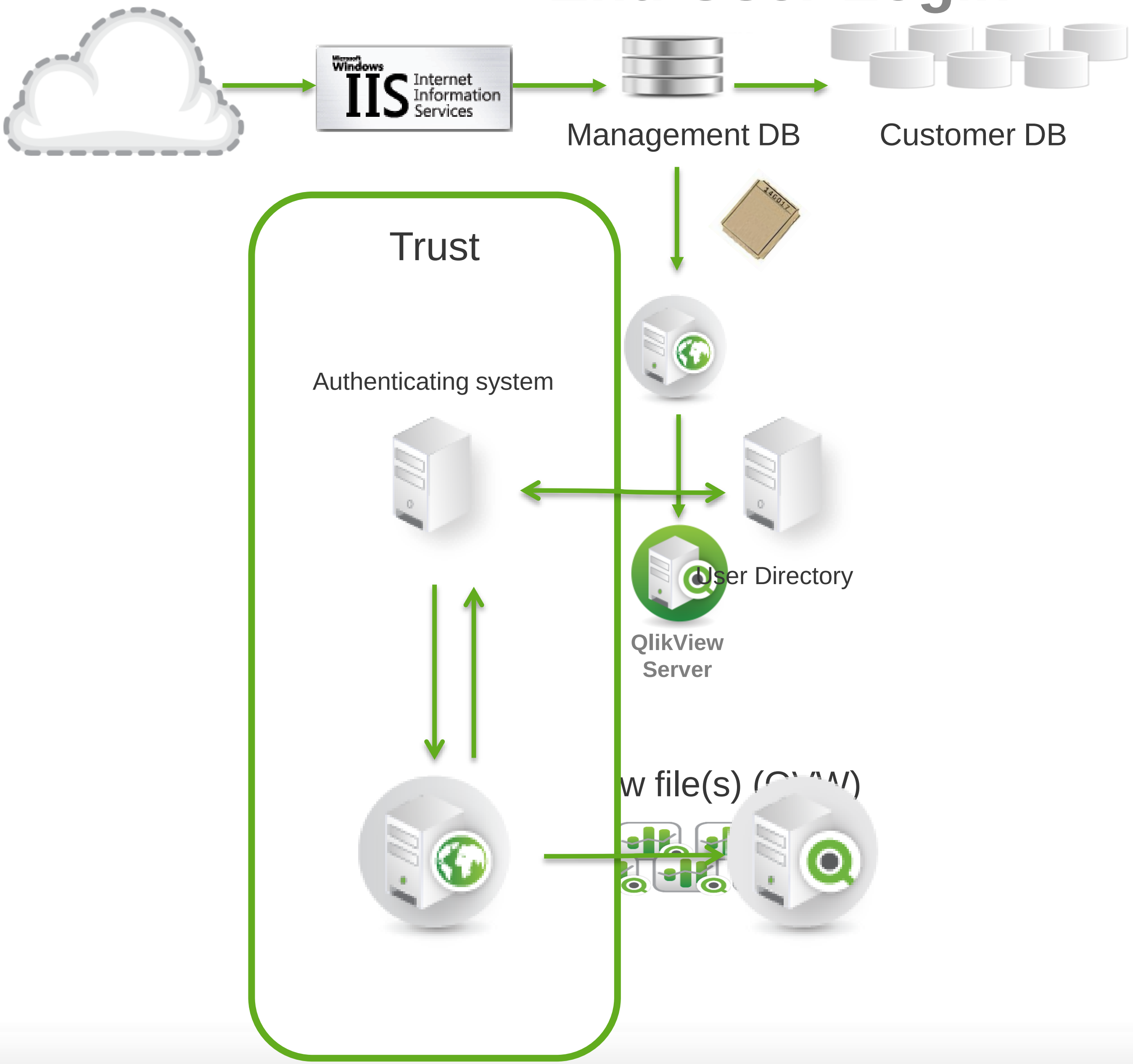
QlikView file (QVW)

QlikView
Publisher

Authorization via Web Tickets for Login



End User Login



Management DB

Customer DB

Trust

Authenticating system

User Directory

QlikView Server

w file(s) (QVW)

The Manual Process

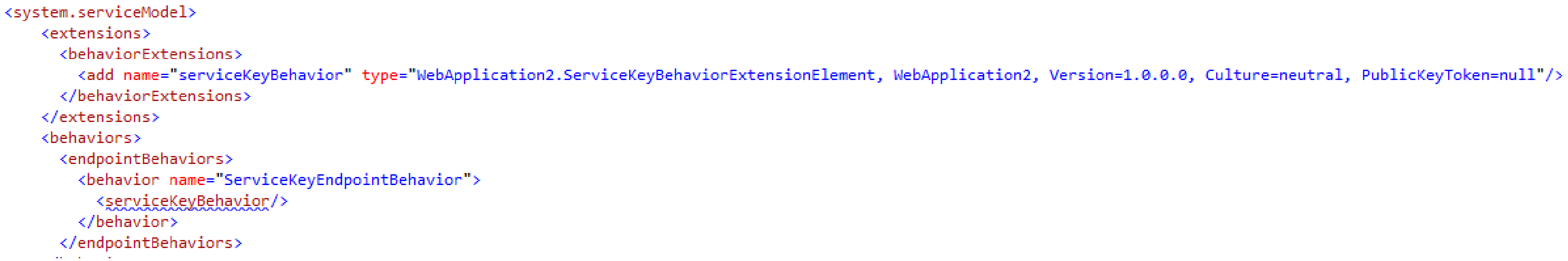
- Create a new instance of our OEM solution
- Copy a QlikView Doc for a new customer
- Make sure the load script point to the right database
- Create a new group in the user directory
- Create a new task and configure the settings

Building A QMS App

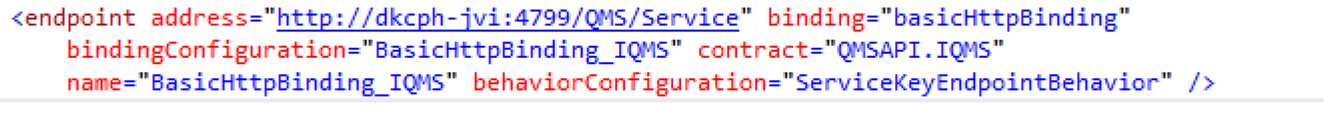
- What you need before you start:
  - Visual Studio
  - An administrator account that is a member of the QlikView Management API group (if not exist, then create group)
  - Access to the QlikView server through port 4799

- Setup Prerequisites:
  - A service reference connection to the QlikView Server (http://localhost:4799/QMS/service)
  - Change Web.Config

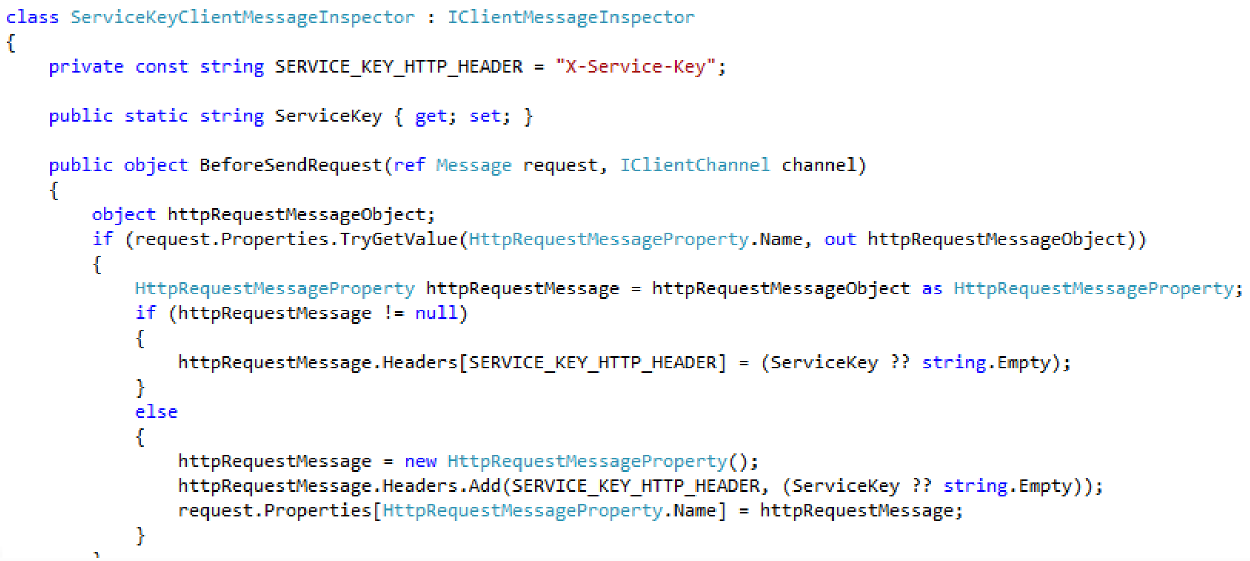
Change Web.Config and Add Class



```
<system.serviceModel>
    <extensions>
      <behaviorExtensions>
        <add name="serviceKeyBehavior" type="WebApplication2.ServiceKeyBehaviorExtensionElement, WebApplication2, Version=1.0.0.0, Culture=neutral, PublicKeyToken=null"/>
      </behaviorExtensions>
    </extensions>
    <behaviors>
      <endpointBehaviors>
        <behavior name="ServiceKeyEndpointBehavior">
          <serviceKeyBehavior/>
        </behavior>
      </endpointBehaviors>
```



```
<endpoint address="http://dkcph-jvi:4799/QMS/Service" binding="basicHttpBinding"
    bindingConfiguration="BasicHttpBinding_IQMS" contract="QMSAPI.IQMS"
    name="BasicHttpBinding_IQMS" behaviorConfiguration="ServiceKeyEndpointBehavior" />
```

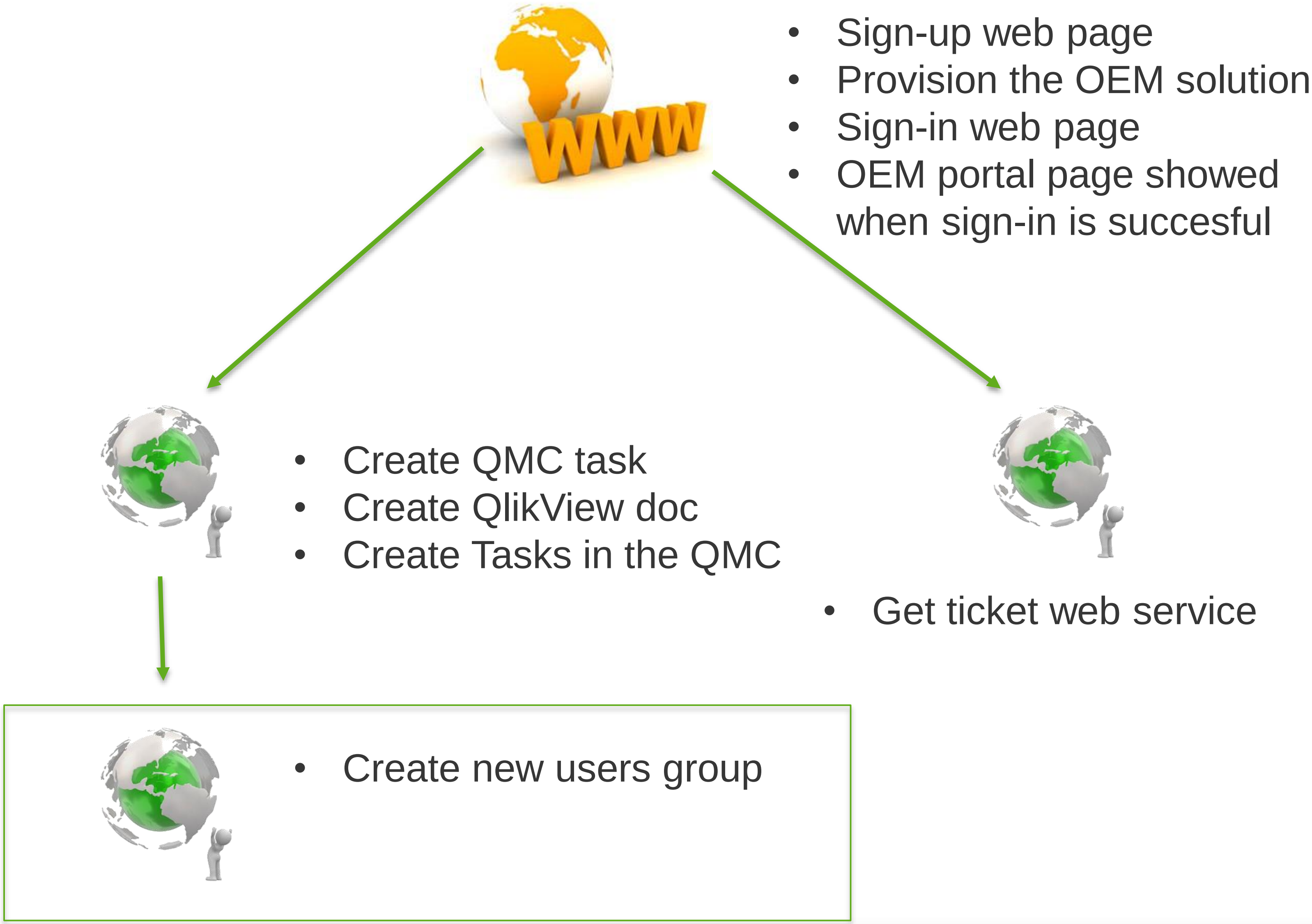


```
class ServiceKeyClientMessageInspector : IClientMessageInspector
{
    private const string SERVICE_KEY_HTTP_HEADER = "X-Service-Key";

    public static string ServiceKey { get; set; }

    public object BeforeSendRequest(ref Message request, IClientChannel channel)
    {
        object httpRequestMessageObject;
        if (request.Properties.TryGetValue(HttpRequestMessageProperty.Name, out httpRequestMessageObject))
        {
            HttpRequestMessageProperty httpRequestMessage = httpRequestMessageObject as HttpRequestMessageProperty;
            if (httpRequestMessage != null)
            {
                httpRequestMessage.Headers[SERVICE_KEY_HTTP_HEADER] = (ServiceKey ?? string.Empty);
            }
            else
            {
                httpRequestMessage = new HttpRequestMessageProperty();
                httpRequestMessage.Headers.Add(SERVICE_KEY_HTTP_HEADER, (ServiceKey ?? string.Empty));
                request.Properties[HttpRequestMessageProperty.Name] = httpRequestMessage;
            }
```

What We Need To Automate



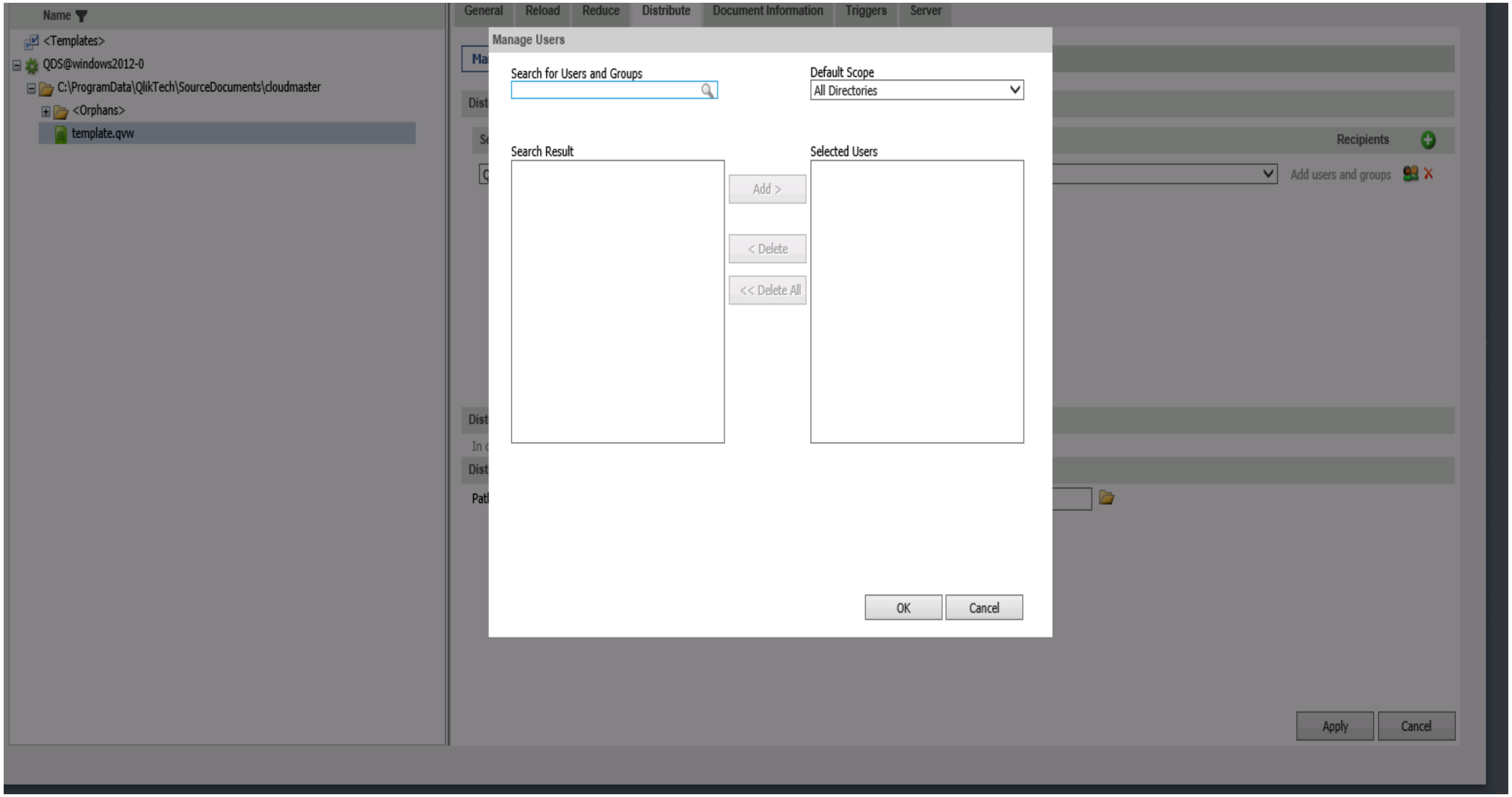
- Sign-up web page
- Provision the OEM solution
- Sign-in web page
- OEM portal page showed when sign-in is succesful

- Create QMC task
- Create QlikView doc
- Create Tasks in the QMC

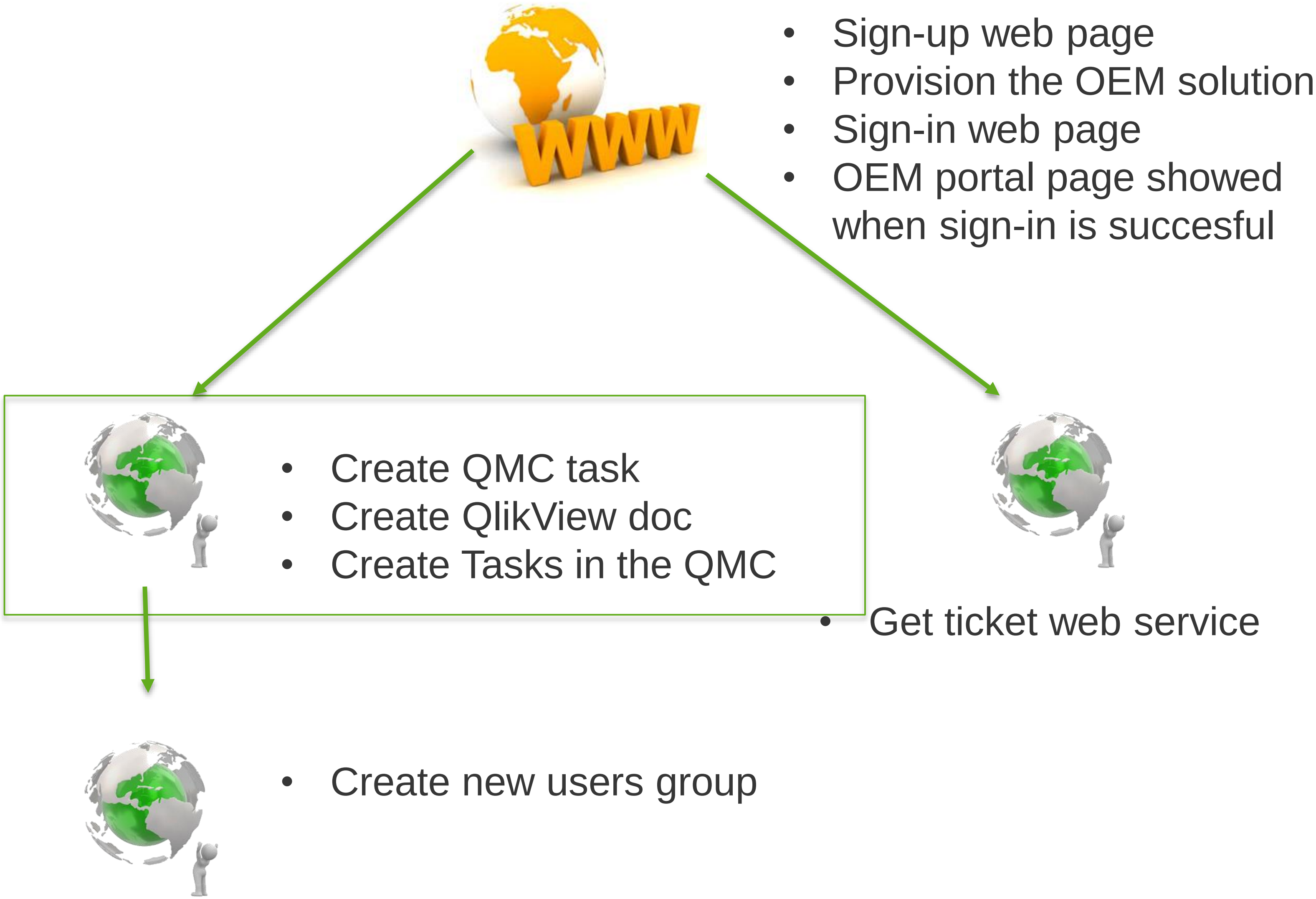
- Get ticket web service

- Create new users group

User or User Group Provisioning



What We Need To Automate That



- Sign-up web page
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- Create QMC task
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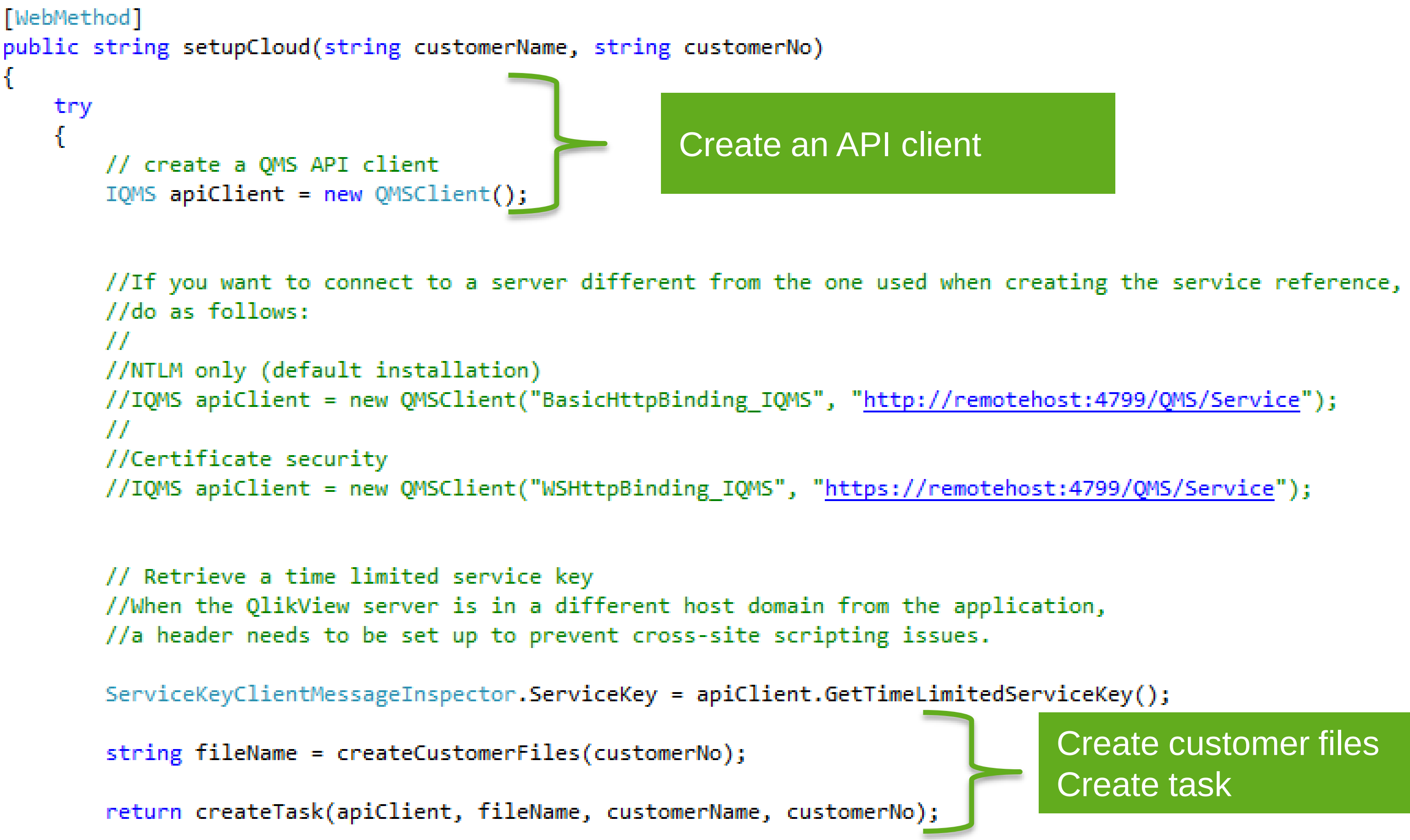
Let’s Look At The Code



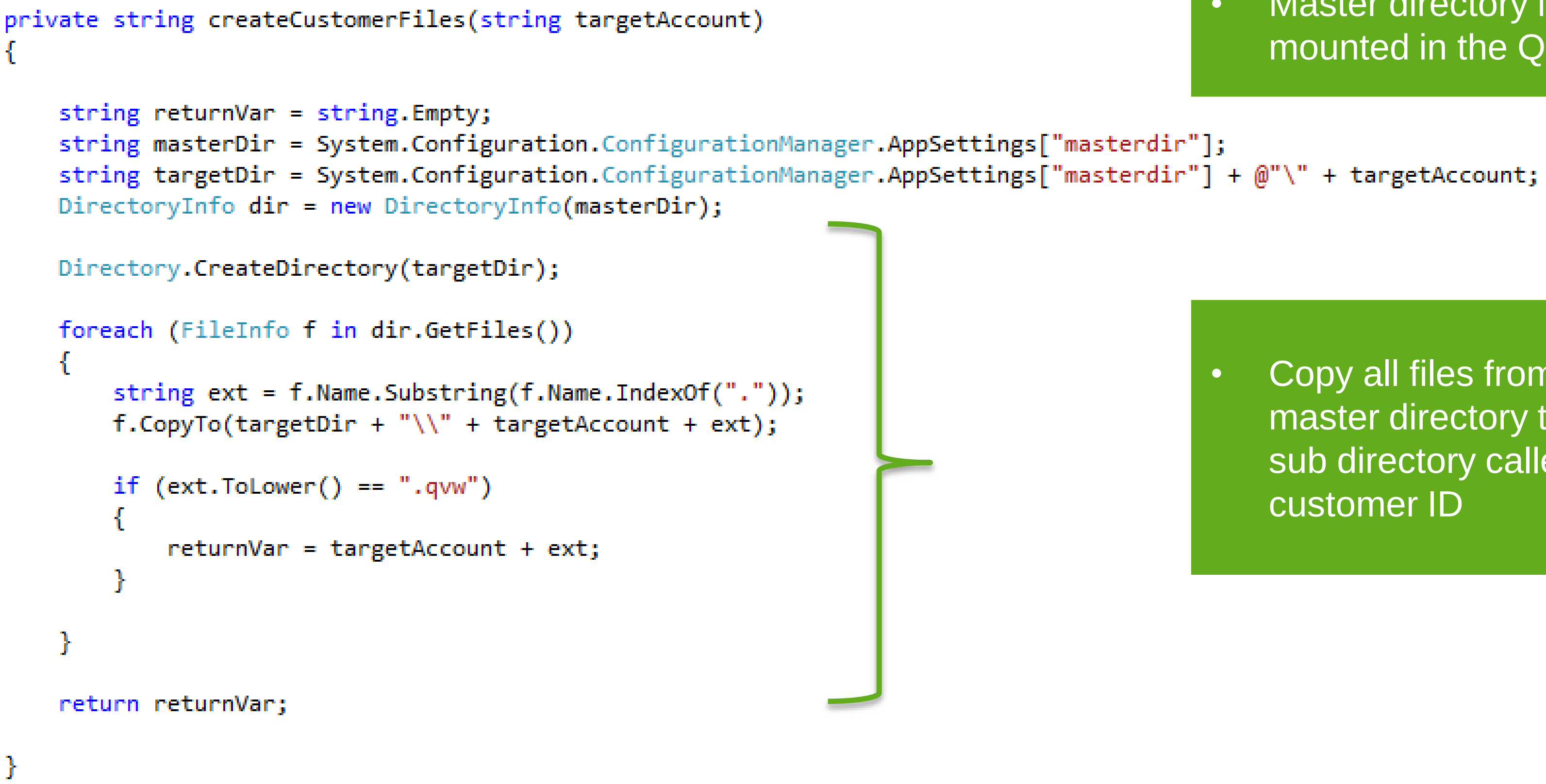
```
[WebMethod]
public string setupCloud(string customerName, string customerNo)
{
    try
    {
        // create a QMS API client
        IQMS apiClient = new QMSClient();


        //If you want to connect to a server different from the one used when creating the service reference,
        //do as follows:
        //
        //NTLM only (default installation)
        //IQMS apiClient = new QMSClient("BasicHttpBinding_IQMS", "http://remotehost:4799/QMS/Service");
        //
        //Certificate security
        //IQMS apiClient = new QMSClient("WSHttpBinding_IQMS", "https://remotehost:4799/QMS/Service");


        // Retrieve a time limited service key
        //When the QlikView server is in a different host domain from the application,
        //a header needs to be set up to prevent cross-site scripting issues.

        ServiceKeyClientMessageInspector.ServiceKey = apiClient.GetTimeLimitedServiceKey();

        string fileName = createCustomerFiles(customerNo);

        return createTask(apiClient, fileName, customerName, customerNo);
```

Create an API client

Create customer files
Create task

Let’s Look At The Code

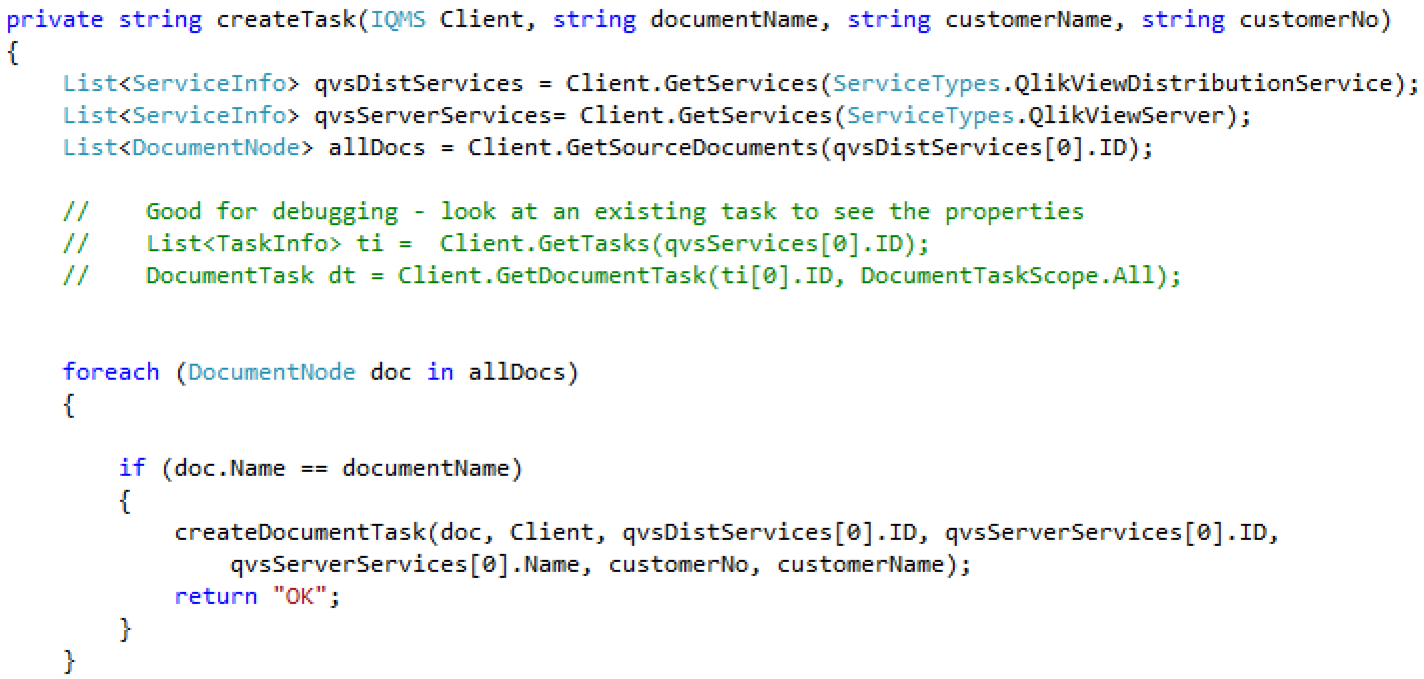
- Create a new directory under the master directory
- Master directory is mounted in the QMC



```
private string createCustomerFiles(string targetAccount)
{

    string returnVar = string.Empty;
    string masterDir = System.Configuration.ConfigurationManager.AppSettings["masterdir"];
    string targetDir = System.Configuration.ConfigurationManager.AppSettings["masterdir"] + @"\" + targetAccount;
    DirectoryInfo dir = new DirectoryInfo(masterDir);

    Directory.CreateDirectory(targetDir);

    foreach (FileInfo f in dir.GetFiles())
    {
        string ext = f.Name.Substring(f.Name.IndexOf("."));
        f.CopyTo(targetDir + "\\" + targetAccount + ext);

        if (ext.ToLower() == ".qvw")
        {
            returnVar = targetAccount + ext;
        }

    }

    return returnVar;

}
```

- Copy all files from the master directory to a sub directory called the customer ID

Let’s Look At The Code

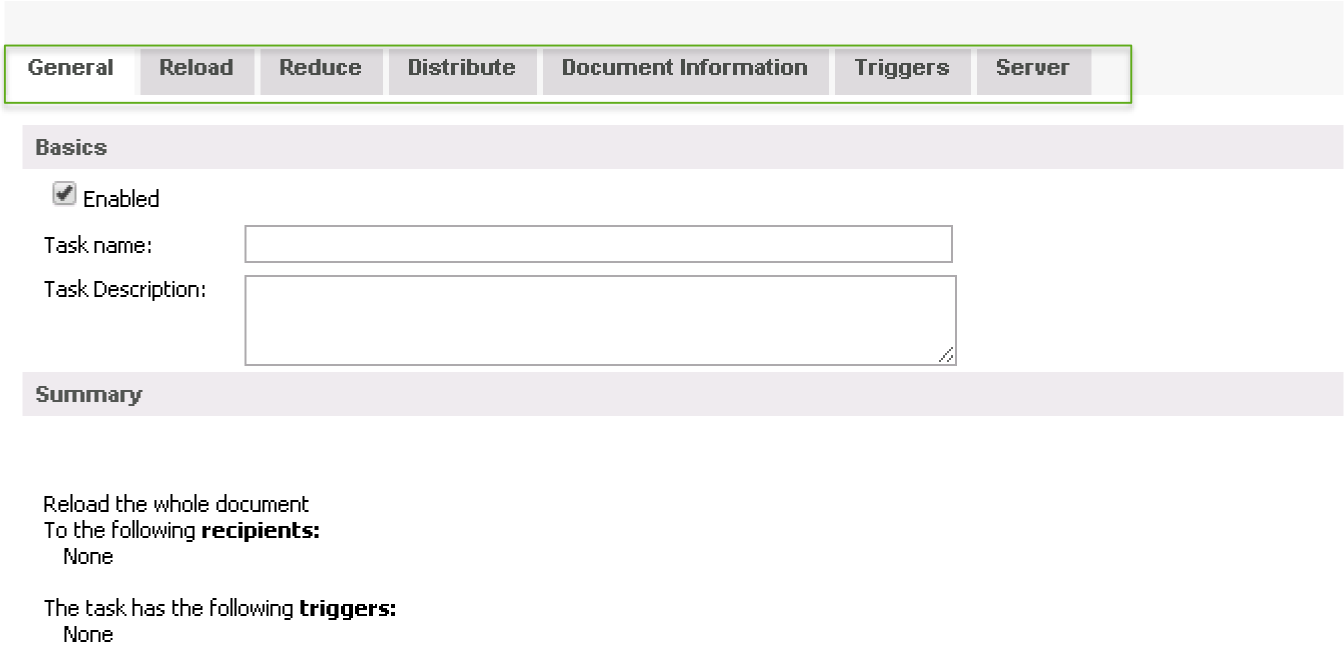


```
private string createTask(IQMS Client, string documentName, string customerName, string customerNo)
{
    List<ServiceInfo> qvsDistServices = Client.GetServices(ServiceTypes.QlikViewDistributionService);
    List<ServiceInfo> qvsServerServices= Client.GetServices(ServiceTypes.QlikViewServer);
    List<DocumentNode> allDocs = Client.GetSourceDocuments(qvsDistServices[0].ID);

    //    Good for debugging - look at an existing task to see the properties
    //    List<TaskInfo> ti =  Client.GetTasks(qvsServices[0].ID);
    //    DocumentTask dt = Client.GetDocumentTask(ti[0].ID, DocumentTaskScope.All);


    foreach (DocumentNode doc in allDocs)
    {

        if (doc.Name == documentName)
        {
            createDocumentTask(doc, Client, qvsDistServices[0].ID, qvsServerServices[0].ID,
                qvsServerServices[0].Name, customerNo, customerName);
            return "OK";
        }
    }
```

Get document list from the publisher

Find the new created document by name and create task

Let’s Look At The Code – Think About The Tabs



Basics

☑ Enabled

Task name:

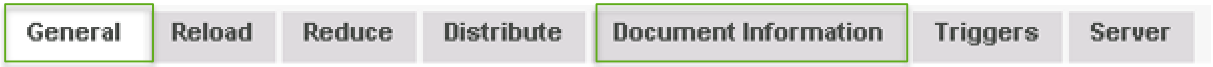
Task Description:

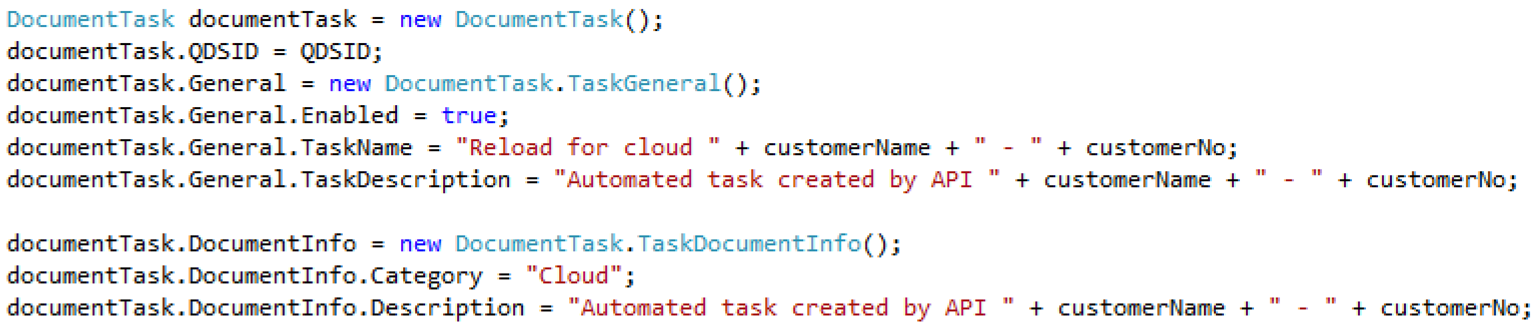
Summary

Reload the whole document
To the following **recipients:**
None

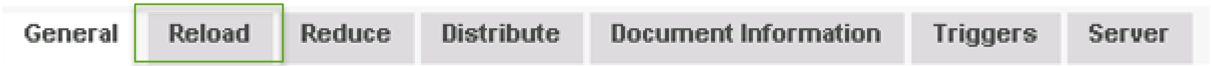
The task has the following **triggers:**
None

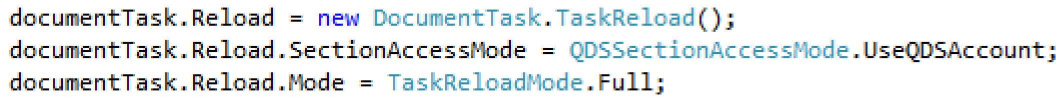
Let’s Look At The Code – Think About The Tabs



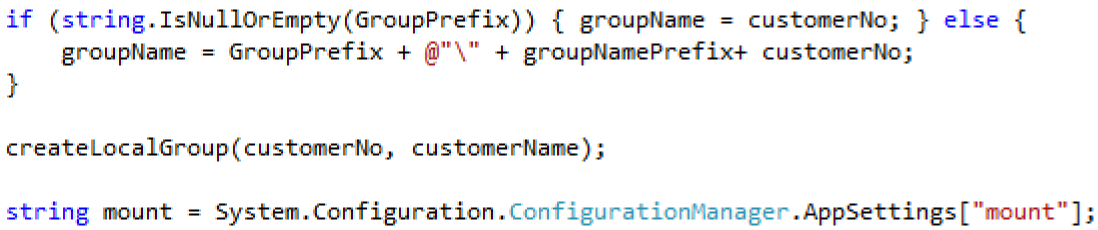


```
DocumentTask documentTask = new DocumentTask();
documentTask.QDSID = QDSID;
documentTask.General = new DocumentTask.TaskGeneral();
documentTask.General.Enabled = true;
documentTask.General.TaskName = "Reload for cloud " + customerName + " - " + customerNo;
documentTask.General.TaskDescription = "Automated task created by API " + customerName + " - " + customerNo;

documentTask.DocumentInfo = new DocumentTask.TaskDocumentInfo();
documentTask.DocumentInfo.Category = "Cloud";
documentTask.DocumentInfo.Description = "Automated task created by API " + customerName + " - " + customerNo;
```





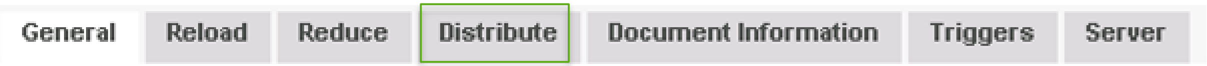
```
documentTask.Reload = new DocumentTask.TaskReload();
documentTask.Reload.SectionAccessMode = QDSSectionAccessMode.UseQDSAccount;
documentTask.Reload.Mode = TaskReloadMode.Full;
```

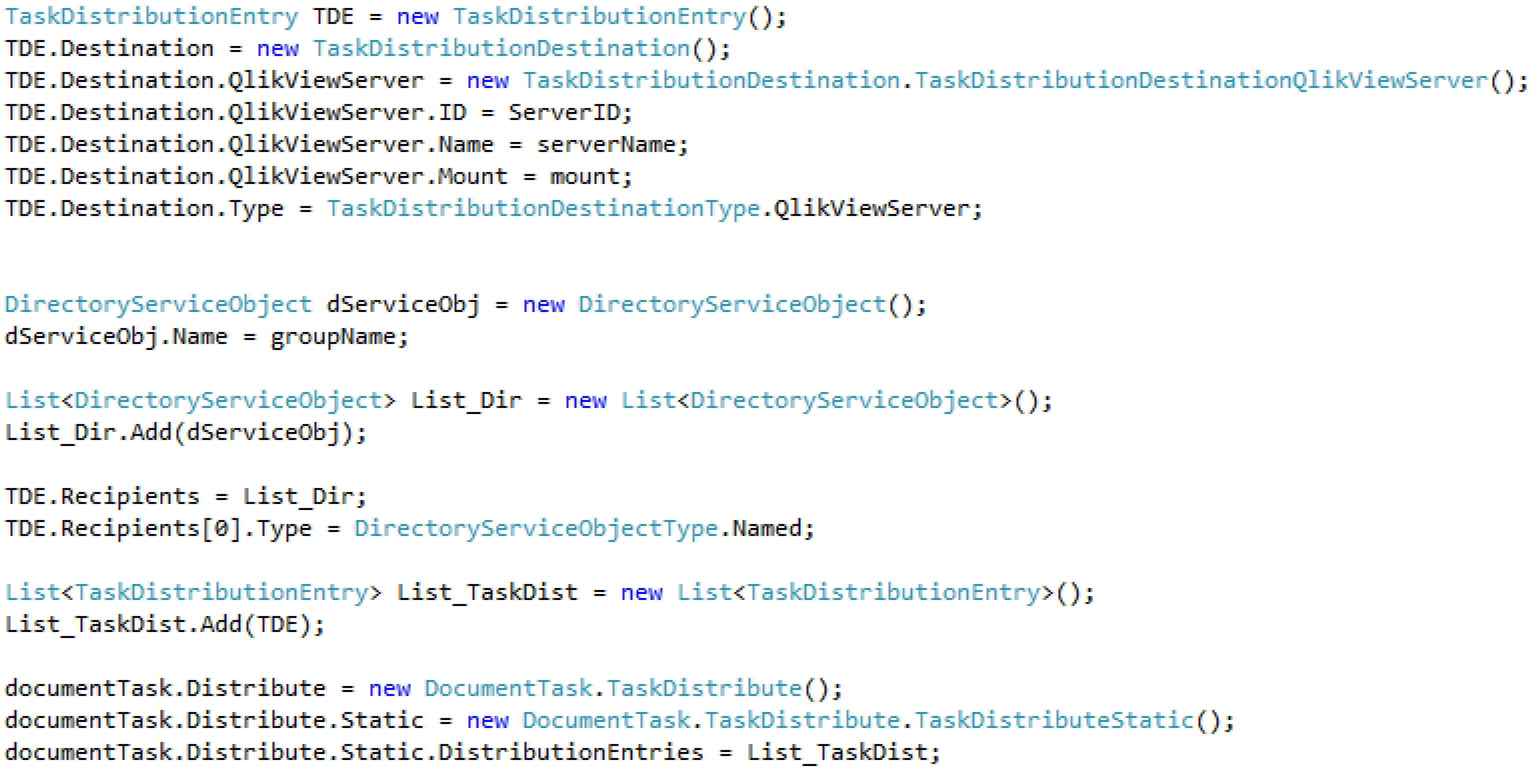


```
if (string.IsNullOrEmpty(GroupPrefix)) { groupName = customerNo; } else {
    groupName = GroupPrefix + @"\" + groupNamePrefix+ customerNo;
}

createLocalGroup(customerNo, customerName);

string mount = System.Configuration.ConfigurationManager.AppSettings["mount"];
```

- Create the group in the user directory
- Get the mount name related to the master directory

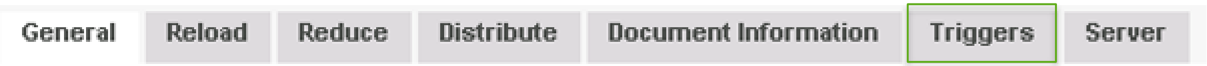
Let’s Look At The Code – Think About The Tabs

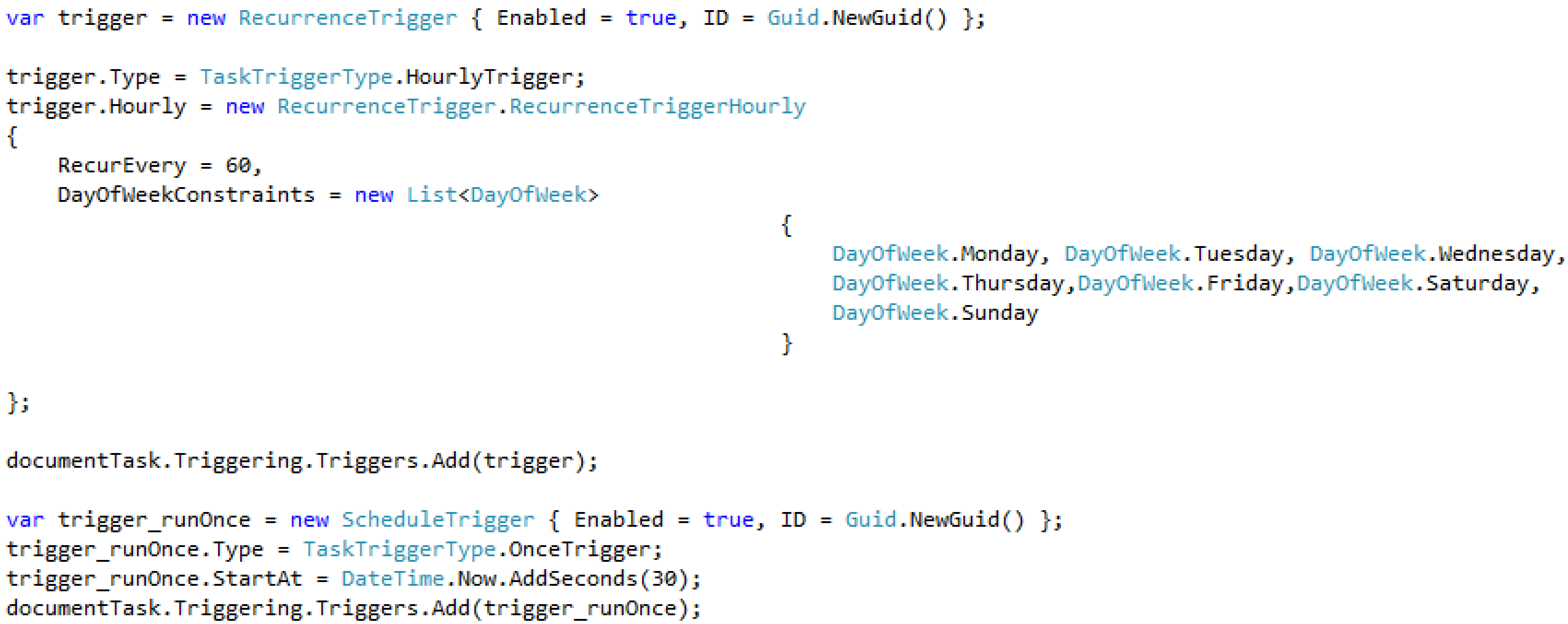




```
TaskDistributionEntry TDE = new TaskDistributionEntry();
TDE.Destination = new TaskDistributionDestination();
TDE.Destination.QlikViewServer = new TaskDistributionDestination.TaskDistributionDestinationQlikViewServer();
TDE.Destination.QlikViewServer.ID = ServerID;
TDE.Destination.QlikViewServer.Name = serverName;
TDE.Destination.QlikViewServer.Mount = mount;
TDE.Destination.Type = TaskDistributionDestinationType.QlikViewServer;


DirectoryServiceObject dServiceObj = new DirectoryServiceObject();
dServiceObj.Name = groupName;

List<DirectoryServiceObject> List_Dir = new List<DirectoryServiceObject>();
List_Dir.Add(dServiceObj);

TDE.Recipients = List_Dir;
TDE.Recipients[0].Type = DirectoryServiceObjectType.Named;

List<TaskDistributionEntry> List_TaskDist = new List<TaskDistributionEntry>();
List_TaskDist.Add(TDE);

documentTask.Distribute = new DocumentTask.TaskDistribute();
documentTask.Distribute.Static = new DocumentTask.TaskDistribute.TaskDistributeStatic();
documentTask.Distribute.Static.DistributionEntries = List_TaskDist;
```

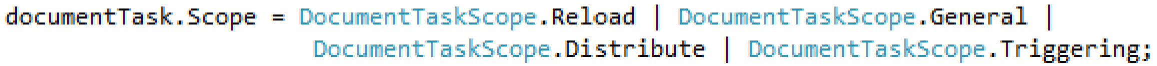
Let’s Look At The Code – Think About The Tabs



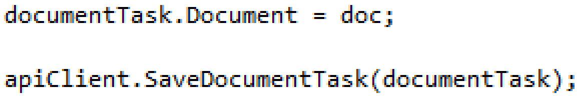


```
var trigger = new RecurrenceTrigger { Enabled = true, ID = Guid.NewGuid() };

trigger.Type = TaskTriggerType.HourlyTrigger;
trigger.Hourly = new RecurrenceTrigger.RecurrenceTriggerHourly
{
    RecurEvery = 60,
    DayOfWeekConstraints = new List<DayOfWeek>
                                                            {
                                                                DayOfWeek.Monday, DayOfWeek.Tuesday, DayOfWeek.Wednesday,
                                                                DayOfWeek.Thursday,DayOfWeek.Friday,DayOfWeek.Saturday,
                                                                DayOfWeek.Sunday
                                                            }

};

documentTask.Triggering.Triggers.Add(trigger);

var trigger_runOnce = new ScheduleTrigger { Enabled = true, ID = Guid.NewGuid() };
trigger_runOnce.Type = TaskTriggerType.OnceTrigger;
trigger_runOnce.StartAt = DateTime.Now.AddSeconds(30);
documentTask.Triggering.Triggers.Add(trigger_runOnce);
```

Let’s Look At The Code – Save The Work



```
documentTask.Scope = DocumentTaskScope.Reload | DocumentTaskScope.General |
                      DocumentTaskScope.Distribute | DocumentTaskScope.Triggering;
```



```
documentTask.Document = doc;

apiClient.SaveDocumentTask(documentTask);
```

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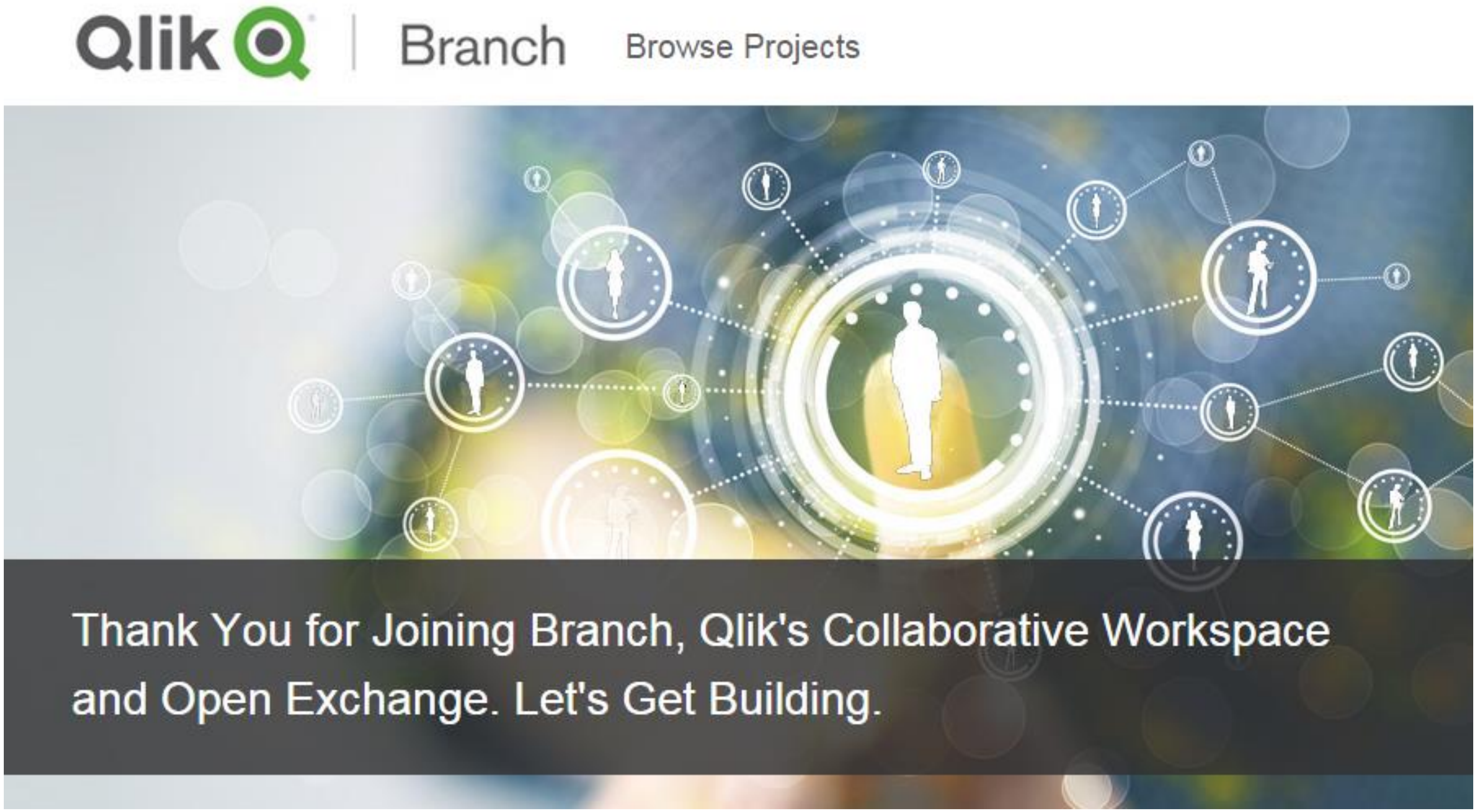
Let’s Look At The Result

Remember to Share



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Thank You