

Legal Statement

These educational materials (hereinafter referred to as the “Materials”) are for the end user’s educational purposes only and are subject to change or withdrawal by CA, Inc. (“CA”) at any time.

These Materials may not be copied, transferred, reproduced, disclosed, modified or duplicated, in whole or in part, without the prior written consent of CA. These Materials are confidential and proprietary information of CA and protected by the copyright laws of the United States and international treaties.

EXCEPT AS OTHERWISE STATED IN THE APPLICABLE AGREEMENT, TO THE EXTENT PERMITTED BY APPLICABLE LAW, CA PROVIDES THESE MATERIALS “AS IS” WITHOUT WARRANTY OF ANY KIND, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. IN NO EVENT WILL CA BE LIABLE TO THE END USER OR ANY THIRD PARTY FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, FROM THE USE OF THESE MATERIALS, INCLUDING WITHOUT LIMITATION, LOST PROFITS, BUSINESS INTERRUPTION, GOODWILL, OR LOST DATA, EVEN IF CA IS EXPRESSLY ADVISED OF SUCH LOSS OR DAMAGE.

The use of any software or product referenced in the Materials is governed by the end user’s applicable license agreement.

The manufacturer of these Materials is CA.

Provided with “Restricted Rights.” Use, duplication or disclosure by the United States Government is subject to the restrictions set forth in FAR Sections 12.212, 52.227-14, and 52.227-19(c)(1) - (2) and DFARS Section 252.227-7014(b)(3), as applicable, or their successors.

Copyright © 2014 CA. All rights reserved. All trademarks, trade names, service marks and logos referenced herein belong to their respective companies. This document is for your informational purposes only. CA assumes no responsibility for the accuracy or completeness of the information. To the extent permitted by applicable law, CA provides this document “as is” without warranty of any kind, including, without limitation, any implied warranties of merchantability, fitness for a particular purpose, or non-infringement. In no event will CA be liable for any loss or damage, direct or indirect, from the use of this document, including, without limitation, lost profits, business interruption, goodwill or lost data, even if CA is expressly advised in advance of the possibility of such damages.

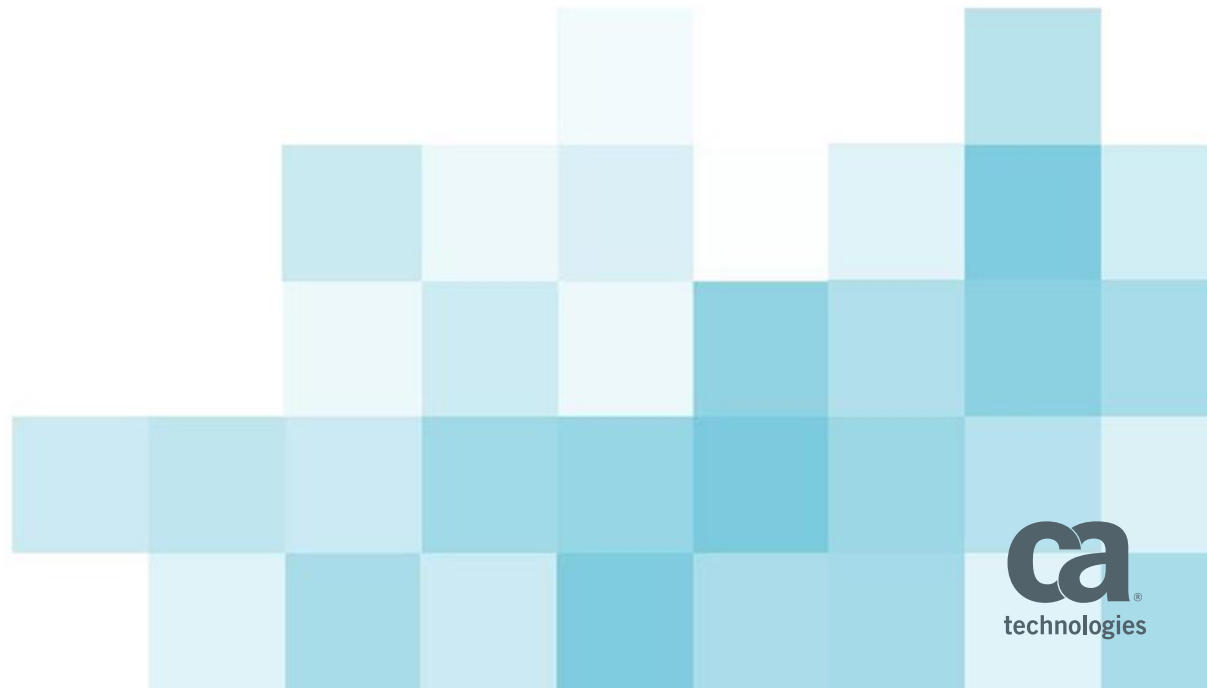
Automation Community – Workshop:

How to use NDG to discover systems

Joe Cabral, Principal Product Manager

Raja Sekhar Thota, Principal Software Engineer

December 18, 2014



How to use NDG to discover systems - Session

Through this workshop, we'll discuss and demonstrate how to:

- Better understand the Network Discovery Gateway
 - The Network Discovery Gateway (NDG)
 - Discovery engines
 - OS classification
 - Discovery options
 - Telnet
 - Sudo
 - Soft-Agent discovery
 - Platform coverage
- DEMO

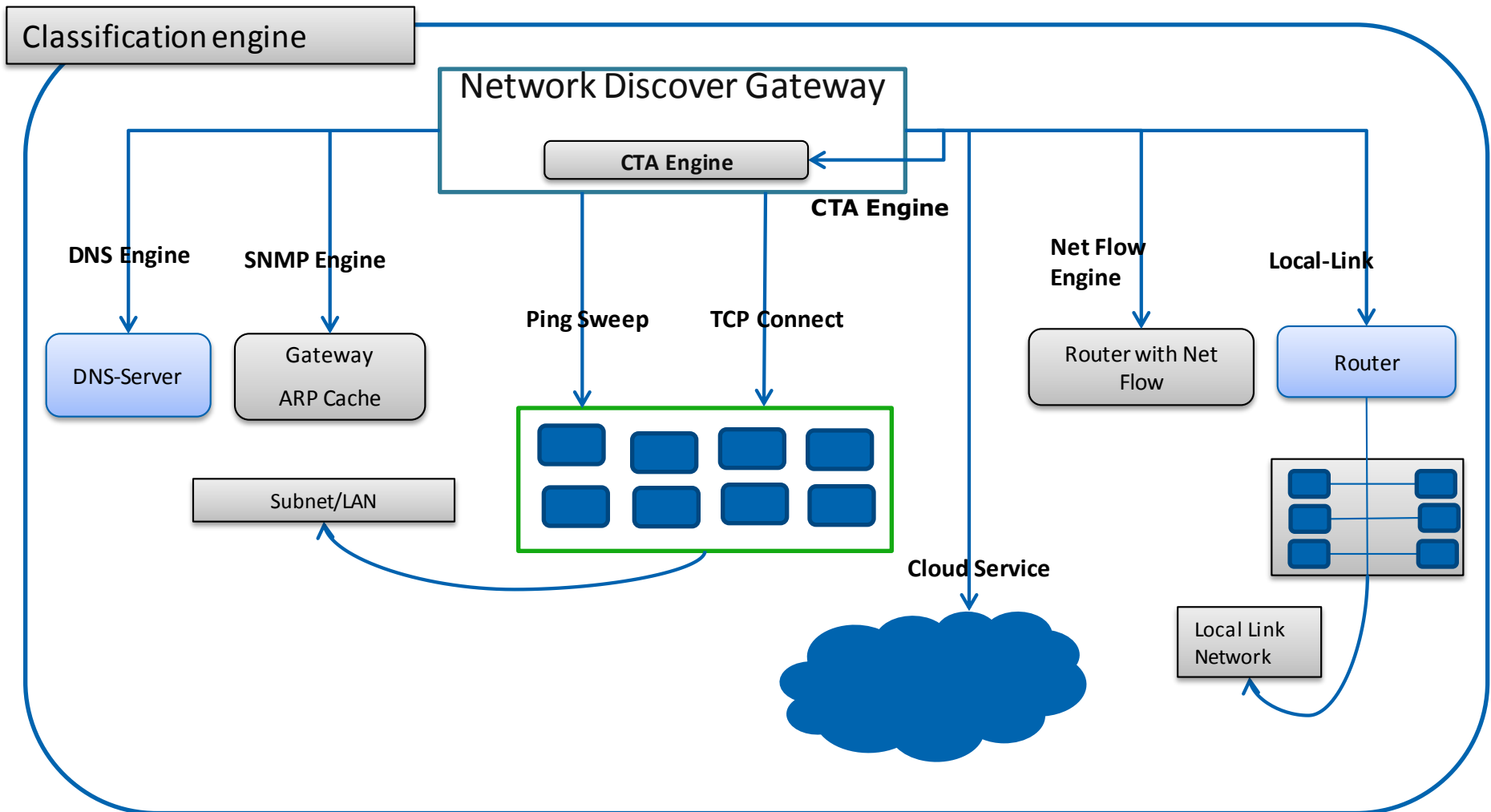


How to use NDG to discover systems

Overview

- NDG performs Network Discovery operations that identify IP addresses of servers on subnets and LAN segments
 - Typically the first component configured by end-user
 - Monitors the presence of servers and services in your enterprise
 - Discovers entity level objects (servers) by specifying 1 of 8 Discovery Engines
 - NDG provides high level Installed Application information leveraging SoftAgents (WMI/SSH/Telnet) to discover officially installed apps through registry, RPM, etc...
 - Soft-Agent Discovery allows detailed agent-less discovery (WMI/SSH/Telnet)
 - Hardware, Applications, Services, Open Ports, Relationships
 - Can have multiple NDGs used with multiple Grid Nodes

Discovery Engines



OS Classification

- NDG uses the following methodologies for classification via port probing:
 - SNMP (TCP/UDP port 161)
 - Windows sockets (TCP port 445, 139, 135)
 - Unix sockets (TCP port 512, 543, 111, 79)
 - SSH (TCP port 22)
 - FTP (TCP port 21)
 - UDP port 137
 - HTTP (TCP port 80, 8080)
 - Telnet (TCP port 23)
 - VMware Web Services (TCP port 443)
 - SCVMM (port 8100)

Discovery options: Telnet

- Telnet
 - A fallback option: In the case that the SSH daemon is not responding on the targeted Linux/UNIX system, and the "Enable user of Telnet" option of the Scan Policy has been selected, NDG will also attempt to connect to the Telnet daemon for SoftAgent processing
 - Because Telnet protocol does not encrypt communication, this option is disabled by default
 - Turn on checkbox "Enable use of Telnet" on the Discovery Options tab

Discovery options: Sudo

- Sudo

- Create user

- Define user to Unix/Linux, or determine which existing user to use

- Sample entry in sudoers file:

```
ndguser    ALL = NOPASSWD: ALL
ndguser    ALL = NOPASSWD: /bin/uname, /bin/echo, /bin/cat, \
            /bin/domainname, /bin/hostname, \
            /bin/netstat, /bin/df, /bin/ps, /bin/rpm, \
            /bin/ls, /sbin/ifconfig, /sbin/ip, \
            /sbin/mii-tool, /sbin/chkconfig, \
            /sbin/sfdisk, /usr/sbin/dmidecode, \
            /usr/bin/cdrecord, \
            /opt/xen/source/bin/xen, /bin/lshmc
```

Discovery options: Sudo

- Update /etc/sudoers file
 - Add above entries to /etc/sudoers file
 - Unix administrator with root access using visudo command is needed for this step
 - Replace 'ndguser' with actual name of sudo user
 - Should not prompt for password (ALL = NOPASSWD) while running commands with sudo prefix
 - Top entry grants 'ndguser' sudo rights to all commands
 - Benefit: Ensures scan will complete without any issues
 - Bottom entry grants 'ndguser' rights to only the commands used by NDG
 - Issue: Possible delays can occur if the defined command/utility does not exist on the system

Discovery options: Sudo

Linux

hostname
uname
domainname
cat
dmidecode
esxcfg-info
xenstore-read
ip
ifconfig
ethtool
mii-tool
df
sfdisk
ls
iscsiadm
esxcfg-mpath
hdparm
smartctl
chkconfig
ps
rpm
cdrecord
systool
lspci
esxcfg-scsidevs
netstat
xe
echo
which

AIX

netstat
lsattr
hostname
uname
lsconf
domainname
oslevel
bootinfo
lscfg
ifconfig
entstat
mktcpip
cat
lspv
lsdev
lslv
df
lssrc
xargs
lspp
lshwres
lspartition
lssyscfg
lshmc
echo
which

HP

netstat
hostname
uname
machinfo
getconf
adb
print_manifest
ifconfig
lanadmin
cat
ioscan
diskinfo
cstm
iscsiutil
df
ls
ps
swlist
nslookup
echo
which
lanscan

Solaris

pfiles
ps
netstat
hostname
uname
domainname
prtdiag
smbios
prtconf
zonename
cat
ifconfig
ndd
nslookup
zoneadm
zlogin
df
format
iostat
iscsiadm
prtvto
pkginfo
svcs
xargs
cdrw
zonecfg
echo
which

Soft-Agent discovery

Soft agent discovery

Server Details

Server name, domain, OS, SNMP details

Network Adapters

IPv4/IPv6 address, subnets, MAC address, network adapters

Hardware

Processor, Memory, BIOS, physical/CD/DVD /Tape drives, logical partitions, file systems

Applications

Applications installed, install date, version, install location

Services/ Daemons

Service name, startup type, display name, path

Open Ports

Open ports, process using it, its path

Relationships

Communication & relationship type, server name/IP/port details of both m/cs, packet count

SAN

Name, Unique ID, Serial, Manufacturer, Model, Storage Capacity, Fail-over, WWNN, WWPN, LUN, iSCSI initiators

Virtualization

Virtual env, parent/child relation, VM guest logical name, VM guest startup type

Soft-Agent discovery – Platform coverage

	Windows	AIX	HP(ia64)	HP(PA-RISC)	Solaris	Linux	z/Linux	VMware ESXi (with SSH)	VMware (WebServices)	IBM-PowerVM(P5/P6)	Solaris Non Global Zones	Red Hat Enterprise Virtualization
host name	x	x	x	x	x	x	x	x	x	NA	x	x
manufacturer	x	x	x	x		x	x	NA	x	NA	NA	NA
model	x	x	x	x		x	x	NA	x	NA	NA	NA
serial_number	x	x	x	x		x	x	NA	NA	NA	NA	NA
os_detail	x	x	x	x	* 2	x	x	x	x	NA	x	* 11
os_type	x	x	x	x	x	x	x	x	x	NA	x	x
os_vrsn_major	x	x	x	x	x			NA	x	NA	x	NA
os_vrsn_minor	x	x	x	x	x			NA	x	NA	x	NA
os_kernel	N/A		x	*1	* 3	x		x	NA	NA	NA	NA
domain name	x	x			x	x	x	NA	NA	NA	NA	NA
processor_name	x	x	x			x		x	x	NA	x	x
processor_arch	x	*4	x	x	x			NA	NA	NA	NA	NA
processor_descr	x							NA	NA	NA	NA	NA
processor_manufacturer	x		x	x		x	x	x	NA	x	NA	NA
processor_max_clock_speed	x	x	x	x	x	x		x	x	NA	NA	x
processor_l2_cache_size	x	x			x	x		x	NA	NA	NA	NA
processor_l2_cache_speed	x	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
processor_logical_cnt	x	x	x	x	x	x	x	x	x	x	x	NA
memory_capacity	x	x	x	x	x	x	x	x	x	x	x	x
memory_type	x	NA	NA	NA	NA	*12	NA	x	NA	NA	NA	NA
memory_speed	x	NA	NA	NA	NA	*12	NA	x	NA	NA	NA	NA
memory_slots_in_use	x	x	NA	NA	x	*12	NA	x	NA	NA	x	NA
memory_total_slots	x	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bios_name	x	NA	NA	NA	x	x	NA	x	NA	NA	NA	NA
bios_manufacturer	x	NA	NA	NA	NA	x	NA	x	NA	NA	NA	NA
bios_serial_number	x	NA	NA	NA	NA	NA	NA	NA	NA	x	NA	NA
IPv4 address	x	x	x	x	x	x	x	NA	x	x	x	x
IPv6 address(es)	x	x			x	x		NA	NA	NA		
mac address	x	x	x	x	x	x	x	NA	x	NA	NA	x
interface index	x	x	x	x	x	x		NA	NA	NA	x	NA
interface speed	x	x	x	x	*6	x		NA	x	NA	NA	x
interface duplex	x	x	x	x	*6			NA	x	NA	NA	NA
interface negotiation	x	x	x	x				NA	NA	NA	NA	NA
default IPv4 gateway	x	x	x	x	*6	x	x	x	x	NA	NA	x
default IPv6 gateway	x					x		NA	NA	NA	NA	
IPv4 dhcp server	x							NA	NA	NA	NA	NA
IPv6 dhcp server								NA	NA	NA	NA	NA
dns domain	x	*6	x	x	*7	x	x	x	x	NA	NA	NA
service_display_name	x	NA	NA	NA	x	NA	NA	NA	*5	NA	x	NA

Soft-Agent discovery – Platform coverage

	Windows	AIX	HP(ia64)	HP(PA-RISC)	Solaris	Linux	z/Linux	VMware ESXi (with SSH)	VMware (WebServices)	IBM-PowerVM(P5/P6)	Solaris Non Global Zones	Red Hat Enterprise Virtualization
service_key_name	x	x	x	x	x	x	x	x	*5	NA		NA
service_logon_as	x	x	x	x	x	x	x	NA	NA	NA	NA	NA
service_path	x	x	x	x	x	x	x	NA	NA	NA	NA	NA
service_startup	x	NA	NA	NA	NA	NA	NA	NA	*5	NA	x	NA
application_name	x	x	x	x	x	x	x	x	NA	NA	x	NA
application_publisher	x	NA	x	x	x	x	x	NA	NA	NA	NA	NA
application_version	x	x	x	x	x	x	x	x	NA	NA	x	NA
application_arch	NA	NA	x	x	x	x	x	NA	NA	NA		NA
application_install_date	x	x	x	x	x	x	x	NA	NA	NA	NA	NA
application_install_location	x	x	x	x	x	x	x	NA	NA	NA	x	NA
application_is_patch	x		x	x				NA	NA	NA		NA
physical_disk_index	x	x	x	x				x	x	NA	NA	NA
physical_disk_name	x	x	x	x	x	x	x	x	x	NA	NA	NA
physical_disk_size	x	x	x	x	x	x	x	x	x	NA	NA	NA
physical_disk_interface_type	x	x			x	x	x	x	NA	NA	NA	NA
physical_disk_media_type	x	NA			x			x	x	NA	NA	NA
physical_disk_model	x	x	x	x				NA	x	NA	NA	NA
physical_disk_free_space	x	x	x	x	x	x	NA	NA	NA	NA	NA	NA
physical_disk_serial_number	*8	x	*6	*6	*9	*10	x	NA	NA	NA	NA	NA
logical_partition	x	x	x	x				NA	NA	NA	NA	NA
logical_partition_name	x	x	x	x		x	NA	x	NA	NA	NA	NA
logical_partition_index	x	x	x	x	x	x	NA	x	NA	NA	NA	NA
logical_partition_filesystem	x	x			x	x	NA	x	NA	NA	NA	NA
logical_partition_is_bootable	x	x			x	x	NA	x	NA	NA	NA	NA
logical_partition_is_primary	x	x					NA	NA	NA	NA	NA	NA
logical_partition_size	x	x	x	x	x	x	NA	x	NA	NA	NA	NA
logical_partition_free_space	x	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cd_dvd_drive_description	x	x	x	x	x	x	NA	NA	NA	NA	NA	NA
cd_dvd_drive_dev_id	x	x	x	x	x	x	NA	NA	NA	NA	NA	NA
cd_dvd_drive_media_type	x	x	x	x	x	x	NA	NA	NA	NA	NA	NA
tape drives	x							NA	NA	NA		NA
tape drive_desc	x							NA	NA	NA	NA	NA
tape drive_dev_type	x							NA	NA	NA	NA	NA
tape drive_manufacturer	x							NA	NA	NA	NA	NA
filesystem name	NA	x	x	x	x	x	x	x	NA	NA	x	NA
filesystem size	NA	x	x	x	x	x	x	x	NA	NA	x	NA
filesystem mount location	NA	x	x	x	x	x	x	x	NA	NA	x	NA
filesystem free_space	NA	x	x	x	x	x	NA	NA	NA	NA	x	NA
Open Ports	x	x	x	x(limitations)	x	x	x	NA	NA	NA	x	x (one port only)

Q & A

Demo

Summary

- This Workshop session demonstrated:
 - *How to use NDG to discover systems*
 - The Network Discovery Gateway
 - Discovery engines
 - OS Classification
 - Discovery options
 - Soft-Agent discovery



- Automation Community:
<https://communities.ca.com/community/ca-automation>
- CCA Cookbook (Flipbook):
<http://flip.it/NLou1>

Questions

Thank you

Business, rewritten by software™