Silent Configuration for Broadcom Advance Server Program (BASPSCfg.exe)

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INTRODUCTION

The Broadcom Advance Server Program (BASP) is a load-balance/failover driver that offers fault tolerance capability to users. BASP allows users to choose different load balancing algorithms (Smart Load Balancing, FEC/GEC and 802.3AD) as well as VLAN tagging.

Because of the rich set of features offered by BASP, configuration is a complicated task for users. This issue also becomes a difficult problem for an OEM that wishes to have a simple deployment method for their dual LAN-on-Motherboard (LOM) machines.

To alleviate the problem, a silent configuration utility (BASPSCfg.exe) is provided to help the OEM to overcome the difficulty. The utility is a Win32® Console Mode executable that takes parameters as teaming configuration options to construct a team—no user interaction is required. For their deployment, OEMs can wrap the utility into their own configuration software.

REQUIREMENTS

The silent configuration utility (BASPSCfg.exe) conforms to following requirements:

- Implemented as a console mode program.
- Takes parameters as configuration options.
- Assumes no interaction with users.
- Exits with a predefined error code to help the caller (that invokes the utility) to determine the result.
- Uses a MAC address to identify a NIC.
- Has an option to take a plain text file that contains configuration information to all teams.
- Runs on W2k, Windows® XP, or later.
- Configures only one static IP address/subnetmask per virtual adapter.
- Assumes BASP is installed on the target system.
- Creates team(s), does not remove or modify.
- Creates only one team via command line; multiple teams can be created using configuration file.
- Requires that a Windows® Management Instrumentation (WMI) service must be running for static IP configuration.

IMPLEMENTATION

BASPSCfg.exe is implemented as a Win32 Console Mode program to reduce the dependency on various Windows OSs. BASPSCfg.exe uses Broadcom Management API (BMAPI) to configure the BASP teams. Because the utility runs independently, the package of the utility should include BMAPI files (bmapi.dll and BASFND.sys).

COMMAND LINE INPUT PARAMETERS

Command line options are defined as follows. All options are case-insensitive.

```
BaspSCfg [-file CFG_file ] | [[-name team_name] [-type team_type] [PHY_NIC_SEL]
[-snic MAC_address] [IP_CFG | VLAN_CFG]]

'[]':               optional options
PHY_NIC_SEL:        -pnic MAC_address [|PHY_NIC_SEL]
IP_CFG:             -ip IP_address -smask subnetmask
VLAN_CFG:           -vname VLAN-name -vid VLAN_ID [IP_CFG] [| VLAN_CFG]
```

When **-file** option is specified, all other options are ignored. The **-file** option allows configuration for multiple teams. Refer to "Configuration File" on page 3 for details. If **-file** is not present, other options can configure only one team.

The PHY_NIC_SEL option allows the selection of multiple physical network adapters.

The **-pnic** option is for load balance adapters and -snic is for a standby adapter. Each load balance team allows only one standby adapter. The FEC/GEC or 802.3ad teams cannot have a standby adapter.

When `IP_CFG` is specified, you must set both the IP and subnet mask or this command is ignored. At least one of the team members must have link because WMI is used to set the static IP address and requires a link.

The `VLAN_CFG` option allows configuration for multiple VLANs. Each **-vname** must couple with **-vid,** or the VLAN configuration is ignored.

The default behavior of BASPSCfg.exe (without any options) grabs all teamable physical network adapters into a Smart Load Balancing (SLB) team without VLAN configured, and the virtual adapter of the team uses DHCP. A NIC's teamability depends on the specific OEM. The default team name is SLBTeam.

If the **-pnic** option is omitted, BASPSCfg.exe also grabs all teamable physical network adapters into a new team. Examples:

- **BaspSCfg** creates a default load balance SLBTeam with all teamable physical network adapters and configures the SLBTeam with DHCP.
- **BaspSCfg -name FGTeam -type 1 -pnic 00101801794D** creates an FEC/GEC FGTeam with one load balance physical adapter.
- **BaspSCfg -name BRCMTeam -pnic 00101801794D -snic 001018 -vname VLAN100 -vid 100 -vname VLAN200 -vid 200** creates a load balance BRCMTeam with two VLANs and configures VLAN100 and VLAN200 with DHCP.
- **BaspSCfg -name BRCMTeam -pnic 00101801794D -snic 001018 -vname VLAN100 -vid 100 -ip 172.16.8.100 -smask 255.255.255.0 -vname VLAN200 -vid 200 -ip 172.16.8.200 -smask 255.255.255.0** creates a load balance BRCMTeam with two VLANs and configures VLAN100 and VLAN200 with a static IP address and subnet mask.
- **BaspSCfg -file TeamConfig.txt** creates team(s) from the input TeamConfig.txt configuration file.

CONFIGURATION FILE

The syntax plain text file is defined as follows:

```
TEAM_CFG
[TEAM_CFG]
...
```

Each TEAM_CFG is defined as follows:

```
name:   team_name
[type:        team_type]
pnic:   MAC_address
[pnic:        MAC_address
...]
[snic:        MAC_address]
[[ip:         IP_address
smask:        subnetmask]
|[vname:      VLAN_name
vid:          VLAN_ID
[ip:          IP_address
smask:        subnetmask]]
...]
```

A configuration file must contain at least one team configuration. BASPSCfg.exe recognizes `name` as the starting point of a team configuration section. All lines after `name` apply to the team_name until another `name` or until end of file. Each team configuration must contain at least one physical network adapter or the configuration of the team is ignored.

If `type` is missing, the default is set to Smart Load Balancing (SLB). If `ip` is set, `smask` must also be set or `ip` is ignored. If `ip` is not set, DHCP is used. Team IP can be set if no VLANs are configured. If any VLAN is configured, the team IP is ignored. Multiple VLAN configurations are allowed; each VLAN configuration allows an optional static IP information. Each IP must be coupled with `smask`, or it is ignored.

There must be at least one white space or tab between the tag (`name`, `pnic`, etc.) and the value pair (`team_name`, `MAC_address`, etc.) in each line. The following is a sample of the TeamConfig.txt configuration file:

```
name: BRCMTeam
type: 1
pnic: 00101801794D
pnic: 001018040a04
vname:  VLAN2
vid: 2
vname:  VLAN3
vid: 3
ip:  172.16.8.3
smask:  255.255.255.0
vname:  VLAN4
vid: 4
ip:  172.16.8.4
smask:  255.255.255.0
vname:  VLAN5
vid: 5
ip:  172.16.8.5
smask:  255.255.255.0
```

EXIT CODES

0 // No error

500 // Not supported OS

501 // Cannot allocate memory

502 // Team has no member

503 // Cannot create more than one team from command line

504 // Cannot create more than 64 VLANs

505 // Cannot open the input file

506 // No team to configure

507 // BASP is not installed and cannot create any team

508 // Cannot set static IP Address

509 // Wrong option flag

510 // Cannot create FECGEC or 802.3ad with a standby adapter

511 // Only Broadcom certified adapters are supported in VLAN

512 // Duplicate adapter physical MAC address

513 // & is not a legal character for the team name

514 // Team already exists, please use a different team name

550 // Cannot initialize BMAPI

551 // Cannot check BASP status

552 // Cannot get all unassigned adapters data

553 // Cannot get adapter PCI information

554 // Cannot create team

555 // Cannot get all unassigned adapters number

556 // Cannot get all created teams

557 // Wrong BMAPI version

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