

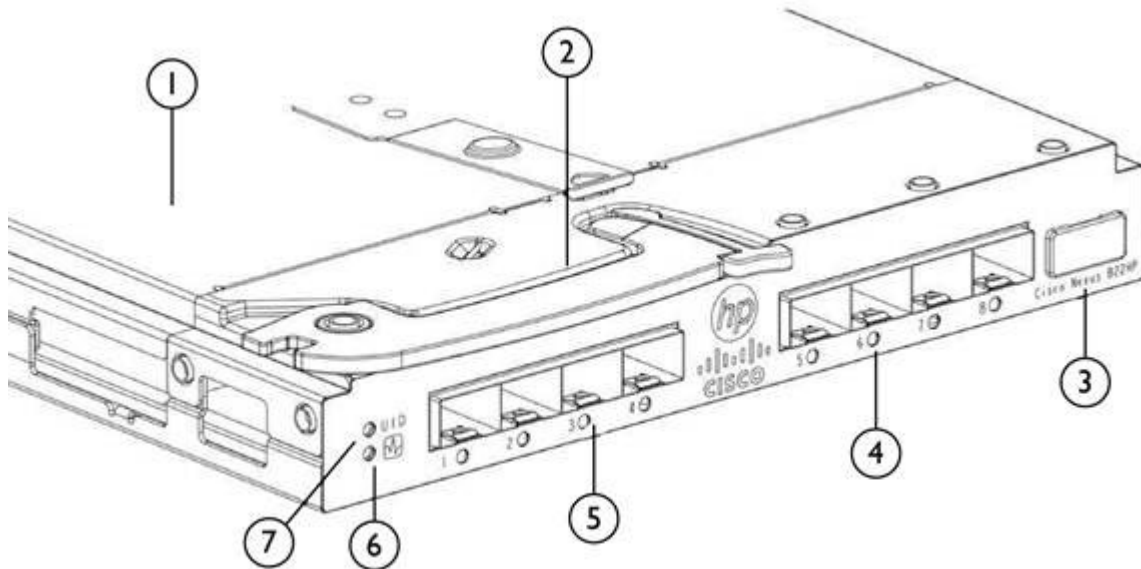
### Overview

### Cisco Fabric Extender for HPE BladeSystem

The Cisco Fabric Extender for HPE BladeSystem (Model B22HP) provides an extension of the Cisco Nexus switch fabric to the HPE server edge. Logically, it behaves like a remote line card to a parent Cisco Nexus 5000/6000/7000 series switch with the Fabric Extender and the parent Nexus together forming a distributed modular system. The Cisco Fabric Extender for HPE BladeSystem forwards traffic to the parent Cisco Nexus Series Switch over eight 10 Gigabit Ethernet uplinks.

Low-cost uplink connections up to 10 meters can be made with copper Twin-ax cable, and longer connections up to 100 meters can use the Fabric Extender Transceiver. Standard 10Gb optics such as SR and LR are also supported.

Downlinks to each server are auto-negotiating and work with all HPE Ethernet and CNA modules allowing customers a choice of Ethernet, FCoE or iSCSI connections. Being a seamless extension of the Nexus Switch allows traffic to be switched according to policies established by the parent Nexus Series Switch with a single point of management.



### Cisco Fabric Extender for HPE BladeSystem (Model B22HP)

- |                              |                                  |
|------------------------------|----------------------------------|
| 1. Switch Module             | 5. SFP+ 10Gbps Fabric Interfaces |
| 2. Release Latch             | 6. Health LED                    |
| 3. Management Port (covered) | 7. UID LED                       |
| 4. Port Status LEDs          |                                  |

## Models and Options

### Models

HP Cisco B22HP Fabric Extender for BladeSystem c-Class

641146-B21

HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class

657787-B21

**NOTE:** The Cisco Fabric Extender for HPE BladeSystem with 16 FET - (PN 657787-B21), comes packaged with 16 Cisco Fabric Extender Transceivers. These Cisco transceivers can be used to connect the Fabric Extender with a parent Nexus 5000/6000/7000 over optical cable up to 100 meters using OM3 grade fiber.

HP Cisco B22HP Fabric Extender for Integrity

AT135A

HP Cisco B22HP Fabric Extender with 16 FET for Integrity

AT136A

**NOTE:** The HPE Integrity Cisco B22HP Fabric Extender with 16 FET - (PN AT136A), comes packaged with 16 Cisco Fabric Extender Transceivers. These Cisco transceivers can be used to connect the Fabric Extender with a parent Nexus 5000/6000/7000 over optical cable up to 100 meters using OM3 grade fiber.

## Standard Features

### Standard Features

#### Performance

- Sixteen 1Gb/10Gb downlinks
  - Each Ethernet downlink supports FibreChannel over Ethernet (FCoE), Datacenter Bridging (DCB), and iSCSI
- Each Ethernet downlink can autonegotiate to 1Gb to support legacy NICs and/or Wake On LAN Eight 10Gb uplinks
  - Each Fabric uplink carries both Ethernet and FibreChannel over Ethernet (FCoE) traffic
  - Fabric uplinks support .5m/1m/3m/5m/7m/10m twinax, Fabric Extender Tranceiver (FET-10G), 10Gbase-SR, and 10Gbase-LR optics
- Up to 48 Fabric Extenders can be managed by a single Nexus 5000/6000/7000 series switch
  - Nexus 5010/5020 supports up to 16 Fabric Extenders
  - Nexus 5548/5596 supports up to 24 Fabric Extenders (L2) and 16 Fabric Extenders (L3)
  - Nexus 6001 supports up to 14 Fabric Extenders
  - Nexus 6001 supports up to 48 Fabric Extenders (L2) and 24 Fabric Extenders (L3)
  - Nexus 7000 supports 32 - 64 Fabric Extenders
- Ports support Ethernet, iSCSI and DCB protocols

#### Management

- Centralized Management - All configuration & monitoring performed on parent Nexus switch
  - Up to 48 Fabric Extenders can be managed by a single Nexus 5000/6000/7000 series switch
    - Nexus 5010/5020 supports up to 16 Fabric Extenders
    - Nexus 5548/5596 supports up to 24 Fabric Extenders (L2) and 16 Fabric Extenders (L3)
    - Nexus 6001 supports up to 14 Fabric Extenders
    - Nexus 6001 supports up to 48 Fabric Extenders (L2) and 24 Fabric Extenders (L3)
    - Nexus 7000 supports 32 - 64 Fabric Extenders
- Supported by CiscoWorks and Cisco Data Center Network Manager
- Support for SNMP V1, V2, V3
- XML (Netconf) support

## Compatibility

#### HPE ProLiant Servers

HPE ProLiant BL2x220c G7  
 HPE ProLiant BL280c G6  
 HPE ProLiant BL420c Gen8  
 HPE ProLiant BL460c Gen9  
 HPE ProLiant BL460c Gen8  
 HPE ProLiant BL460c G7  
 HPE ProLiant BL460c G6  
 HPE ProLiant BL465c Gen8  
 HPE ProLiant BL465c G7  
 HPE ProLiant BL465 G6  
 HPE ProLiant BL490c G7  
 HPE ProLiant BL490c G6  
 HPE ProLiant BL495c G6  
 HPE ProLiant BL620c G7  
 HPE ProLiant BL660c Gen8  
 HPE ProLiant BL660c Gen9  
 HPE ProLiant BL680c G7

## Standard Features

HPE ProLiant BL685c G7  
HPE ProLiant BL685 G6

**NOTE:** Some servers listed above may be discontinued.

### HPE ProLiant Workstation Servers

HPE ProLiant WS460 Gen9  
HPE ProLiant WS460 Gen8  
HPE ProLiant WS460 G6

### HPE Integrity Servers

HPE Integrity BL860c Server Blade  
HPE Integrity BL860c i2 Server Blade  
HPE Integrity BL860c i4 Server Blade  
HPE Integrity BL870c Server Blade  
HPE Integrity BL870c i2 Server Blade  
HPE Integrity BL870c i4 Server Blade  
HPE Integrity BL890c i2 Server Blade  
HPE Integrity BL890c i4 Server Blade  
HPE Integrity Superdome 2

**NOTE:** The Fabric Extender Modules (PN AT135A and AT136A) are supported only with HPE Integrity Superdome 2.

**NOTE:** Some servers listed above may be discontinued.

**NOTE:** The Integrity Blade servers do not support Open VMS with this particular interconnect.

### HPE ProLiant c-Class Server Blade Enclosures

HPE BladeSystem c3000 Enclosure  
HPE BladeSystem c7000 Enclosure

### Cisco Network Switches

Cisco Nexus 5010  
Cisco Nexus 5020  
Cisco Nexus 5548P  
Cisco Nexus 5548UP  
Cisco Nexus 5596UP  
Cisco Nexus 6001UP  
Cisco Nexus 6004 UP  
Cisco Neuxs 7004  
Cisco Nexus 7009  
Cisco Nexus 7010  
Cisco Nexus 7018  
Cisco Nexus 7700  
Cisco Nexus 7706  
Cisco Nexus 7710  
Cisco Nexus 7718  
Cisco Nexus 9396

### Network Cabling

10Gb  
Multimode fiber cable; 62.5/125 or 50/125 microns  
Singlemode fiber cable; 9/125 micron  
TwinAx Copper

## Additional Features

**NOTE:** Feature support for the Cisco Fabric Extender for Hewlett Packard Enterprise is mainly derived from the parent switch feature set. Therefore, consult the appropriate Cisco Nexus switch series data sheet, release notes, and configuration guides for a comprehensive list of feature supported. Table 1 lists the hardware capabilities of the Cisco Nexus Fabric Extender for HPE BladeSystem. For more information, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at: <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

### Interfaces

- Sixteen internal 1/10 Gigabit Ethernet/FibreChannel over Ethernet ports
- Eight external 10 Gigabit Ethernet/FCoE Fabric Interfaces
- External Fabric Interfaces support a wide range of transceivers:
  - Fabric Extender Transceiver
  - 10Gbase-SR optic
  - 10Gbase-LR optic
- Copper twin-ax cables, .5/1/3/5/7/10m

### Enhanced Ethernet

- Support for Data Center Bridging (DCB) suite

### Quality of service (QoS)

- Layer 2 IEEE 802.1p (class of service [CoS])
- 8 hardware queues per port
- Per-port QoS configuration
- Local policing (64 policers)
- CoS trust
- Configurable tail-drop threshold
- Egress strict-priority queuing
- Egress port-based scheduling:
  - Weighted Round Robin (WRR)

### High availability

- Uplink traffic management through Cisco EtherChannel hashing or static port pinning
- vPCs for dual-homed active-active connectivity across two Cisco Nexus 5000/6000/7000 Series Switches
- vPCs for dual-homed straight-through NIC connectivity across two Cisco Series Fabric Extenders
- In-Service Software Upgrade (ISSU)

### Security

- Local classification (256 access control list [ACL] entries)

### Management

- Fabric extender management using in-band management
- UID and Health LEDs
- Syslog
- Simple Network Management Protocol Versions 1, 2, and 3 (SNMP v1, v2, and v3)
- Enhanced SNMP MIB support
- XML (NETCONF) support
- Remote monitoring (RMON)
- Cisco Discovery Protocol Versions 1 and 2
- Switched Port Analyzer (SPAN) source on server ports
- Power-on self-test (POST)
- Cisco Generic Online Diagnostics (GOLD): Ethernet
- Comprehensive boot-up diagnostic tests
- CiscoWorks
- Cisco Data Center Network Manager (DCNM); the Cisco Fabric Extender is managed through the

## Additional Features

parent Cisco Nexus Series Switch using Cisco DCNM and standard SNMP, XML interfaces, and command-line interface (CLI)

### Configuration MIBs

- ENTITY-MIB
- IF-MIB
- FABRIC-EXTENDER MIB
- CISCO-ENTITY-EXT-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-ENTITY-SENSOR-MIB
- CISCO-ETHERNET-FABRIC-EXTENDER-MIB

### Monitoring MIBs

- RMON-MIB

### Industry standards

- IEEE 802.1p: CoS prioritization
- IEEE 802.1Q: VLAN tagging
- IEEE 802.3: Ethernet
- IEEE 802.3ae: 10 Gigabit Ethernet
- IEEE 802.3ap: 10GBase-KR
- SFF 8431 SFP+ support
- 10GBASE-SR
- 10GBASE-LR
- RMON
- SFF-8461

## Service and Support

**Service and Support NOTE:** The Cisco Fabric Extender is an extension of the Nexus fabric, therefore primary support for the Fabric Extender comes from the support package applied to the Nexus switch. Customers who have a Cisco Smartnet contract on the parent Nexus switch should consider Cisco for all first line support calls. For more information, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:  
<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

### HPE Technology Services

HPE Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability and avoid downtime.

### Protect your business beyond warranty with HPE Care Pack Services

When you buy HPE Options, it's also a good time to think about what level of service you may need. HPE Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

### Recommended Services

#### Recommended HPE Care Pack Services for optimal satisfaction with your HPE product 3-Year HPE 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an Hewlett Packard Enterprise authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

#### HPE ProLiant Server Hardware Installation

Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

### Related Services

#### Related HPE Care Pack Services to enhance your HPE product experience 3-Year HPE 6 hour Hardware Support Onsite Call-to-Repair Service

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HPE Global Solution Center.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf>

#### HPE Proactive Select Service

Provides a flexible way to purchase Hewlett Packard Enterprise best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

### Insight Remote Support

Delivers secure remote monitoring and support for Hewlett Packard Enterprise servers and storage, 24x7 at no additional cost. Available as part of Hewlett Packard Enterprise Warranty, Care Pack and Service Contract offers.

**Parts and materials** Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to

## Service and Support

maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual or the technical product data sheet will not be provided, repaired or replaced as part of this service.

### Coverage

For BladeSystem enclosures, this service covers the enclosure, power supplies, fans, enclosure devices, and options not designated by Hewlett Packard Enterprise as requiring separate coverage.

### For more information

To learn more on services for HPE ESSN Options, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:

<http://www.hp.com/services/proliant> or <http://www.hp.com/services/bladeSystem>



## Related Options

|                           |   |            |
|---------------------------|---|------------|
| <b>Connection Options</b> | HP C-series 10GbE Short Range SFP+ Transceiver                            | AP783A     |
|                           | HP C-series SFP+ to SFP+ Active Copper 7.0m Direct Attach Cable           | QK701A     |
|                           | HP C-series SFP+ to SFP+ Active Copper 10.0m Direct Attach Cable          | QK702A     |
|                           | HP BladeSystem c-Class 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable | 487649-B21 |
|                           | HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable   | 487652-B21 |
|                           | HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable   | 487655-B21 |
|                           | HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable   | 537963-B21 |

**NOTE:** HPE BladeSystem cables listed above may report an "Unknown Cable" message on the Cisco Nexus switch log depending on NX version. Cable is still usable.

**NOTE:** Additional Cisco SFP+ module types may be procured directly from Cisco for customers wishing to use standard LR optical connections between the Fabric Extender and the Nexus Switch

**Service and Support Offerings** (HPE Care Pack Services) **NOTE:** For hardware replacement under warranty or HPE Care Pack services, contact Hewlett Packard Enterprise.

**NOTE:** SAN/Fabric switches for the HPE c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs.

SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

### Hardware Support Services On-site Service

#### c7000 HPE Care Pack Services

HP 3 year Next business day c7000 Enclosure Hardware Support UE477E

HP 3 year 4 hour 24x7 c7000 Enclosure Hardware Support UE479E

#### Support Plus 24

HP 3 year Support Plus 24 Insight Control Linux Edition BladeSystem c7000 Service UH321E

### Hardware Services On-site Service

#### c3000 HPE Care Pack Services

HP 3 year Next business day c3000 Enclosure Hardware Support UH309E

HP 3 year 4 hour 24x7 c3000 Enclosure Hardware Support UH311E

### Installation & Start-up Services

HP Startup BladeSystem c7000 Infrastructure Service UE602E

HP Startup BladeSystem c3000 Infrastructure Service UF817E

HP Startup BladeSystem c3000 + Operating System Service UF818E

HP Enhanced Network Installation and Startup Service for HP BladeSystem UE603E

HP Startup BladeSystem c3000 Enclosed Network Service UF814E

HP Install c-Class Server Blade Service UE493E

HP Hardware Install c-Class Enclosure and Server Blade Service UE494E

**NOTE:** For more information, customer/resellers can contact

**<http://www.hp.com/services/bladessystemservices>**

## Technical Specifications

|   |                                  |   |
|---|----------------------------------|---|
| <b>Shipping Dimensions</b>  | <b>Length</b>                    | 13.88 in (352.55mm)   |
|   | <b>Width</b>                     | 10.63 in (270.00mm)   |
|   | <b>Height</b>                    | 4.75 in (120.65mm)  |
| <b>Shipping Weight</b>  |                                  | 2.0kg (4.4lbs)  |
| <b>Product Specifications Hardware</b>                              | <b>Connectors and Cabling</b>    | <p><b>Cisco Fabric Extender for HPE BladeSystem</b></p> <ul style="list-style-type: none"> <li>• Sixteen internal 1/10 Gigabit Ethernet/FibreChannel over Ethernet/iSCSI ports</li> <li>• Eight external 10 Gigabit Ethernet/iSCSI/FCoE Fabric Interfaces - SFP+ type connectors</li> <li>• External Fabric Interfaces support a wide range of transceivers: <ul style="list-style-type: none"> <li>○ Fabric Extender Transceiver</li> <li>○ 10Gbase-SR optic</li> <li>○ 10Gbase-LR optic</li> </ul> </li> <li>• Copper twin-ax cables, .5/1/3/5/7/10m</li> </ul> |
|   | <b>Indicators</b>                | <p>Total of 10 LEDs on the face plate</p> <ul style="list-style-type: none"> <li>• 8 LEDs for uplink port status</li> <li>• 2 HPE specific LEDs to indicate Health and UID status</li> </ul>  |
| <b>System Unit</b>  | <b>Dimensions</b><br>(L x W x D) | 10.5in x 7.5 in x 1.1 in<br>267.7mm x 92.79mm x 27.94mm   |
|   | <b>Weight</b>                    | 1.27kg (2.8 lbs)  |
|   | <b>Environmental Ranges</b>      | <p><b>Temperature Range</b></p> <p>Operating Temperature 50° to 104° F (10° to 40° C)</p> <p>Storage Temperature -40° to 140° F (-40° to 60° C)</p> <p><b>Operating Relative Humidity</b> 10 to 95%<br/>(non-condensing)</p> <p><b>Storage Relative Humidity</b> 5 to 95%<br/>(non-condensing)</p>  |
|   | <b>Power Specifications</b>      | 12V @ 6A (72 W)<br>Max (70 watts Typical)   |
| <b>Safety and Compliance</b>  | <b>Safety Certifications</b>     | <p>CSA certified to UL/CSA 60950-1</p> <p>CB report and certificate to IEC 60950-1 with all country deviations</p> <p>CE Marking</p>  |
| <b>Electromagnetic Emissions Certifications FCC Part 15 Class A</b> |                                  | <p>FCC Part 15 Class A</p> <p>EN 55022 Class A (CISPR22 Class A)</p> <p>VCCI Class A</p> <p>AS/NZS 3548 Class A or AS/NZS CISPR22 Class A</p> <p>KCC Class A</p> <p>BSMI Class A</p> <p>CE Marking</p>  |

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## Technical Specifications

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**Environment-friendly Products and Approach****End-of-life Management and Recycling**

Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

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## Summary of Changes

| Date        | Version History       | Action  | Description of Change  |
|-------------|-----------------------|---------|--|
| 17-Dec-2015 | From Version 13 to 14 | Changed | Standard Features section was updated.   |
|             |                       | Removed | Obsolete SKUs deleted:<br>UE478E, UE480E, UH322E, UH323E, UH310E, UH312, UF540E  |
| 12-Dec-2014 | From Version 12 to 13 | Changed | Cisco Network Switched added: <ul style="list-style-type: none"> <li>• Cisco Nexus 7706</li> <li>• Cisco Nexus 7710</li> <li>• Cisco Nexus 7718</li> </ul> |
| 15-Nov-2014 | From Version 11 to 12 | Changed | Compatibility section was updated  |
| 10-Oct-2014 | From Version 10 to 11 | Added   | Cisco Network Switched added: <ul style="list-style-type: none"> <li>• Cisco Nexus 7700</li> <li>• Cisco Nexus 9396</li> </ul>                             |
| 13-Aug-2014 | From Version 9 to 10  | Changed | Connection Options updated   |
| 08-Nov-2013 | From Version 8 to 9   | Changed | Changes made throughout the QuickSpecs except for the Technical Specifications section.  |
| 26-Apr-2013 | From Version 7 to 8   | Changed | Standard Features: Updated HPE Integrity Servers section of the Compatibility section.   |
| 15-Mar-2013 | From Version 6 to 7   | Added   | Compatibility: Added HPE ProLiant BL660c Gen8 to the HPE ProLiant Servers section.   |
| 09-Nov-2012 | From Version 5 to 6   | Changed | Changes made in Standard Features section.   |
| 11-May-2012 | From Version 2 to 5   | Changed | Change made in the Compatibility section.  |
| 27-Mar-2012 | From Version 1 to 2   | Changed | Changes were within the Standard Features section.   |



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