

Enhancing Data Center Efficiency Through In-House Cleaning Expertise

Dear: **Data Center Director/Facilities Operation Company**

I hope this message finds you well. My name is Ashraf Almuhtaseb, and I am a Certified Data Center Cleaning Specialist with expertise in maintaining the cleanliness efficiency of such mission-critical facilities.

I understand the challenges that data centers facing in balancing operational efficiency, hardware longevity, and cost management. Having worked closely with data centers, I've observed that many facilities rely on external cleaning companies, which often leads to higher costs and inconsistent quality, I believe I can help your valued organization in addressing these concerns by establishing an in-house cleaning department under my guidance, which your data center can benefit in several ways:

1. **Cost Reduction:** Eliminate recurring expenses associated with outsourcing and achieve long-term savings.
2. **Tailored Expertise:** As an in-house specialist, I can ensure cleaning protocols align precisely with your facility's unique requirements.
3. **Operational Flexibility:** Having an internal cleaning team allows for immediate response to unforeseen needs, ensuring minimal disruption to operations.
4. **Higher Standards of Care:** I will implement and oversee cleaning schedules and techniques that meet or exceed industry standards, enhancing hardware reliability and longevity.

In this profile, I'll be talking briefly on the importance of cleaning data centers, some challenges facing data centers and why your valued organization would hire my services to be in the frontline facing such challenges and enhancing the clean environment of data centers.

Moreover, I'd love to take the opportunity to discuss how I can help you in establishing this department and enhancing your facility's performance, kindly let me know your availability for a meeting in the coming days?

Thank you for considering this initiative, and I look forward to exploring how we can work together to make your data center more efficient and cost-effective

Warm regards,

Ashraf Almuhtaseb

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Ashraf@idata.center

Why cleaning of data centers is important?

Majority of business owners spent a good investment protecting access to this information inside data center, making sure that all their firewall's protection software are up-to-date and that hackers trying to penetrate their systems are surely kept far away behind the protected walls.

You have to keep in mind if anything happened that destroyed this important data, what would be the business affect onwards, what will be business reputation affect after all the efforts to build it?

These possible dangers are much more obvious than the one that can cause the greatest damage

Contaminants, dust and other factors in your data center can create the most feared threats to your hardware. if these factors not been eliminated from your data center, the entire place will be operated at high risk

Cause of failure inside data center

Circuit boards quality can be affected by environmental factors.

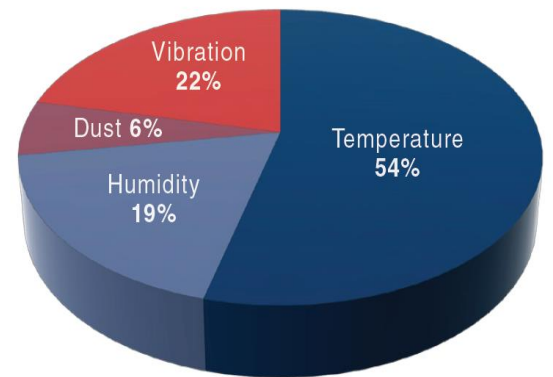
Circuit boards constantly exposed to moisture, dust, heat and cold can experience failure. For example, temperature changes can make elements in the circuit boards contract or expand, which could damage or warp the soldering joints and boards.

Extra dust around the circuit boards can gradually build up, eventually clogging the board. This clogging can cause the circuit board to overheat and require electronic repairs. Additionally, excess moisture can cause corrosion, rust and oxidation, harming the Circuit boards

Dust may also be conductive. Insulating dust is more of a problem because it is electrostatically charged and so sticks to electronic components. This effectively thermally insulates them so they fail from overheating, regardless of the actual temperature of the data center.

Here are some of the failure mechanisms caused by dust;

- *Insulation of electronic components causing thermal overload
- *Corrosion caused by acidic or caustic particles
- *Short circuit caused by conductive particles



Electronic Equipment Failure Causes



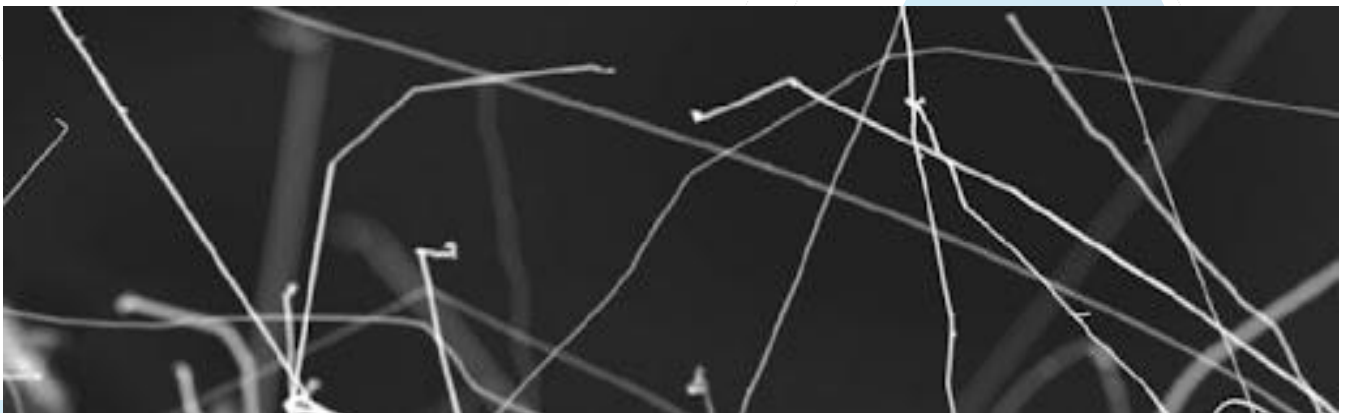
Do Insects also conduct electricity?

Yes. The pheromones summon additional ants who may also become electrocuted, and the area can quickly become so overwhelmed with dead ants that they cause a short circuit. Other bugs, like cockroaches and bedbugs, are drawn to outlets and electronics because they like spaces that are tight, dark and warm. Electronics provide the perfect environment for them to gather around. Whether it's a hefty power supply plugged into an outlet, a game console, an internet router, or even refrigerator motors, the electronic device or appliance can become infested with roaches, feces, and eggs



“Tin” or “zinc” whiskers and “white rust”

Tin or Zinc whiskers are minute electrically conductive pure - metal crystalline structures that grow on components and products having electroplated tin as a surface finish. Zinc whiskers can grow in abundance within data centers, causing bridging and shorting between electrical conductors and component terminations. While zinc whiskers remain attached to their source i.e. floor panels, pedestals, etc they are basically dormant, however when the whiskers are disturbed and dislodged, they become airborne and circulate freely throughout the environment. Disturbance is likely to be caused by routine maintenance activities in the Data Centre, including for example, lifting, sliding, reinstalling of access floor tiles or overhead trays and installing of network cables.



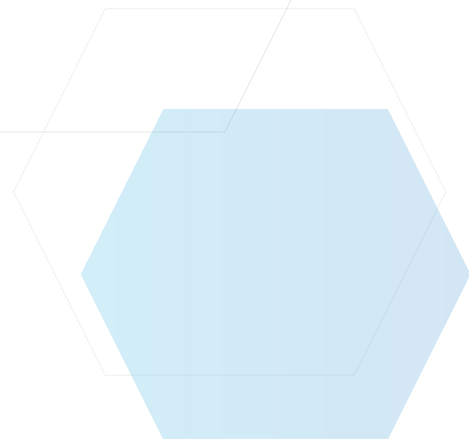
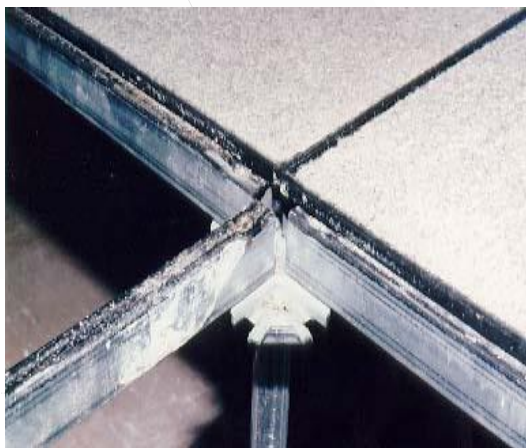
Once inside IT equipment, zinc whiskers as electrically conductive structures, can cause various electrical failures, ranging from intermittent to permanent short circuits. Zinc whiskers can also become a physical impediment to moving parts or obscure optical surfaces and sensors within some equipment

White rust

Atmospheric moisture contains a small amount of contaminants (salt or minerals) and zinc will react quickly with it to form zinc hydroxide, a chalky white and relatively unstable oxide of zinc. Where freshly galvanized steel is exposed to this type of moisture (rain, dew, condensation) in oxygen deficient environment, the moisture will continue to react with the zinc and aggressively consume the coating. The most common condition in which white rust occurs is with galvanized products that are nested together, tightly packed, or when water can penetrate between the items and remain for extended periods such as construction sites where materials are stored outside through poor weather conditions. White rust can cause particulate contamination of the data center as a result of the white chalky matter becoming loose and airborne within the facility.



Source: DCA Data Centre Anti-Contamination Guide V1.3





How frequent do data centers needs to be cleaned in a year?

Overall cleaning any data center, it is recommended to have a full deep cleaning once a year and 2 – 3 maintenance cleaning (once each quarter)



ISO 14644: Cleanroom Standards

The ISO 14644 standard is a globally recognized set of guidelines for the design, classification, and operation of cleanrooms and controlled environments. It is developed and maintained by the International Organization for Standardization (ISO) and is widely used across industries requiring strict contamination control, including pharmaceuticals, electronics, biotechnology, and now increasingly in data centers.

Why ISO 14644 is Relevant to Data Centers

Data Reliability: Dust and particulate matter can lead to hardware failures and reduced lifespan of equipment.

Cooling Efficiency: Clean air improves HVAC system performance and prevents airflow obstructions.

Regulatory and Client Confidence: Achieving ISO 14644 certification demonstrates commitment to high-quality standards, appealing to clients and regulators.

ISO14644 classes

Recommended class for Data Centers: **Class 8**

ISO Class Number	Maximum Allowable Particles/m ³					
	≥ 0.1µm	≥ 0.2µm	≥ 0.3µm	≥ 0.5µm	≥ 1µm	≥ 5µm
1	10	2				
2	100	24	10	4		
3	1,000	237	102	35	8	
4	10,000	2,370	1,020	352	83	
5	100,000	23,700	10,200	3,520	832	29
6	1,000,000	237,000	102,000	35,200	8,320	293
7				352,000	83,200	2,930
8				3,520,000	832,000	29,300
9				35,200,000	8,320,000	293,000

What Does μm Mean?

The term μm stands for **micrometer**, which is a unit of length in the metric system. It is equivalent to one-millionth of a meter or one-thousandth of a millimeter:

1 Micrometer (μm) = 0.000001 meters (10^{-6} m)

Applications of Micrometer (μm):

Science and Engineering: Used to measure microscopic objects like cells, bacteria, or other minute structures.

Cleanroom Standards: Air cleanliness is often measured in micrometers, referring to the size of particles (e.g., ISO 14644 standards for data centers).

Manufacturing: Precision tools and components are often measured in micrometers to ensure exact specifications.

Medical Field: Used to describe dimensions of microscopic organisms, medical implants, or fine surgical tools.

Example Sizes in Micrometers:

The micrometer is symbolized by the Greek letter " μ " followed by "m".



What is the number of samples locations calculations readings for iso14644?

The number of sample locations required to verify compliance with ISO 14644-1 (Air Cleanliness Classification by Particle Concentration) is determined by the size of the cleanroom or controlled area. ISO 14644 specifies a formula and provides tables to calculate the number of sampling locations based on the room's area.

Calculation for the Number of Sample Locations

The number of sample locations is calculated using the formula:

$$NL=27 \times (A \text{ m}^2 \div 1000)$$

Where:

NL = Number of sample locations (rounded up to the next whole number).

A = Area of the cleanroom or zone in square meters (m²).

Simplified Table of Sample Locations

Below is a quick reference for typical cleanroom sizes:

Room Area (m ²)	Minimum Sample Locations
2	2
4	2
10	3
20	5
50	8
100	10
500	23
1,000	32
Larger than 1000 m ²	Use the above formula

Sampling Procedure

A- Particle Measurement:

Measure particle concentration at each sampling location for the required particle sizes (e.g., 0.1 µm, 0.5 µm).

Use particle counters that comply with ISO 21501-4 standards.

B- Duration of Sampling:

The volume of air sampled at each location must be sufficient to detect the required number of particles based on the cleanroom classification.

C- Uniform Distribution:

Sampling points should be evenly distributed across the room, avoiding clustered locations unless local contamination sources are expected.

Why Using HEPA Filtered Vacuum at Data Center?

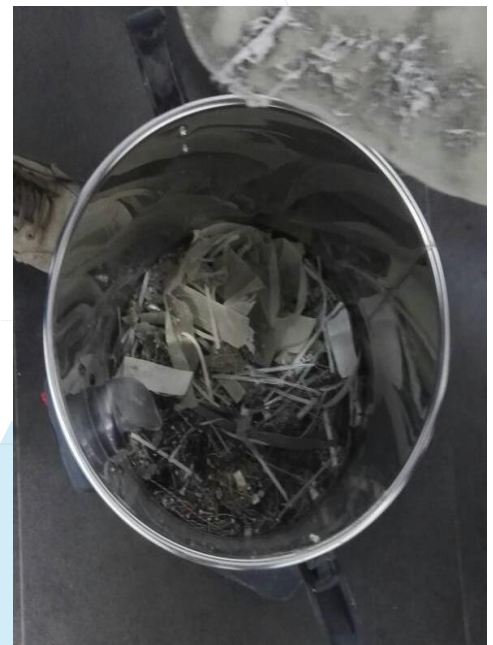
Using a HEPA-filtered vacuum machine is a best practice for data centers, ensuring a clean, safe, and efficient operating environment. It protects critical IT infrastructure, reduces the risk of contamination-related failures, and enhances overall performance and reliability.

HEPA (High-Efficiency Particulate Air) filters can capture 99.97% of airborne particles as small as 0.3 microns (μm).

This ensures the removal of dust, dirt, and other contaminants that can settle on servers, cooling systems, and other sensitive equipment.

Standard vacuums may recirculate fine particles back into the air, but HEPA-filtered vacuums trap them.

Samples of collected dust, debris and harmful materials under raised floor in one of Data Center Technical Cleaning Projects:



More To Read About:

- [What Type of Cleaning Liquids to Be Used When Doing Technical Cleaning Inside Data Centers?](#)
- [Can Normal Janitors Do a Cleaning Inside Data Center?](#)
- [What to Wear When Doing Technical Cleaning Inside Data Centers?](#)
- [Should the Cleaning Team Clean the Power Panels or Any Other High Voltage Electronic Cabinets When Doing Cleaning Task Inside Data Centers?](#)
- [Which Particle Counter Device to Use for Taking the Sampling Record at Data Center?](#)
- [When To Take the Reading of ISO 14644 for Cleaned Data Center?](#)
- [What is ESD Cleaning in Data Centers?](#)
- [Contamination Control Sticky Mats](#)
- [Other more information on my webpage...](#)

Visit the page of Articles on my personal website for more about Data Center Technical Cleaning:

<https://idata.center/Articles>





Why hiring Ashraf Almuhtaseb within your organization:

- 1- Having enough years of experience in data center cleaning business
- 2- Certified Data Center Cleaning Specialist since 2021
- 3- Led many projects for data center cleaning in matter of commercial and technical aspects starting from site survey, Pre-sales, putting technical proposal, costing for the project, sending commercial proposal and executing the project with our technical team till handing over the project to the end user
- 4- Executing data center cleaning projects for big firms such as: STC, STCS, Mobily, National Cybersecurity Authority (NCA), Tadawul Exchange, etc...
- 5- Having Diploma Degree in subject of Computer Networks (inside Saudi Arabia)
- 6- Having a valid membership ID for Saudi Council of Engineers
- 7- Holding a valid Iqama ID with the subject of (Computer Network Technician)
- 8- Can run as stand-alone position to do monitoring and assessment for data center technical cleaning
- 9- Can do a test before and after cleaning the data centers and generate the report of ISO 14644 showing the class that matching the extracted readings by Particle Counter Hardware
- 10- Having managerial roles for over 15+ years supervising multiple technical and commercial teams
- 11- Flexible with hiring contracts: permanent, semi-annual or as a separate consulting body person
- 12- Can join within a short time of period

What Roles I Can Interact Within Your Organization:

- A- I can establish a new department for Data Center Technical Cleaning Services within your organization and train a new team of data center cleaning.
- B- Act as independent person to do inspection on your Data Center Cleaning Contractors for the current/future data center technical cleaning projects, generate internal reports, setting cleaning procedures and making sure they are followed correctly.

Type of Positions can be filled for such a role:

- C- Data Center Facilities Cleaning Manager
- D- Clean Facility Environment Manager
- E- Facilities Environments Manager
- F- Facilities Clean Environment Manager

Personal Information

Birth Place: Saudi Arabia
Nationality: Jordanian
Resident at: Riyadh, Saudi Arabia
Driving License: Valid
Iqama License: Valid

Work Experience



Etam Trading Est – Riyadh City, KSA

Ultra Power LLC - USA

Data Centre Cleaning Services, Passive Networking Solution Providers.

Business Development Manager

Sep 2021 – Aug 2023

Main Tasks and Duties:

- As per agreement with Ultra Power LLC which located in USA, the Data Center Cleaning and other services will be offered through Etam Est in KSA which I been appointed to represent and develop these services making sure of high quality delivered to all clients
- Developing the Data Center Cleaning Services by applying ISO 14644 with all necessary technologies to make sure of implementing a trusted technology and awareness among the DC Managers all over the KSA Market.
- Applying ISO 14644, Class 7 & 8 for the Data Centers which invested in cleaning their technical facilities.
- Enhances organization reputation by accepting ownership for accomplishing new and different requests; exploring opportunities to add value to job accomplishments
- Closing new business deals by coordinating requirements; developing and negotiating contracts.
-



4 Data Information Technologies Co. LTD – Riyadh City, KSA

Data Centre Infrastructure, Passive Networking Solution Providers.

Business Development Manager - April 2018 – June 2021

Main Tasks and Duties:

- Applying ISO 14644, Class 7 & 8 for the Data Centers which invested in cleaning their technical facilities.
- Working with key clients such as STC, STCS, Mobily, MIDIS Group, Tadawul, NCA (Cyber Security Authority), MAWHIBA, Royal Protocol, SAMI (AEC), etc.
- Identify sales leads, presenting services to new clients and maintain a good business relationship with existing and new business clients
- Develop and maintain selling process by setting and modifying sales and operations goals as necessary.
- Enhances organization reputation by accepting ownership for accomplishing new and different requests, exploring opportunities to add value to job accomplishments
- Closes new business deals by coordinating requirements; developing and negotiating contracts; integrating contract requirements with operations team.
- Delivering awareness of the offered added value services by 4Data making sure they are well known and reaching to the maximum number of concerned Data Center Managers and decision makers.
- Managing other teams (Sales & Technical) so that everyone understands their required contribution.
- Part of my roles were as a Project Manager handling projects and assigning PM's to each project, one of major project I handled directly is shifting the Data Centre of Atheeb (GO Telecom) from their old building to the new Data Centre in Riyadh – Morooj District



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Data Centre Infrastructure, Passive Networking Solution Providers.

Territory Sales Manager - January 2017 – March 2018

Main Tasks and Duties:

- Applying ISO 14644, Class 7 & 8 for the Data Centers which invested in cleaning their technical facilities.
- Develop and maintain an area strategy setting and modifying operations and goals as necessary to achieve business targets.
- Assess local market conditions and identify current and prospective sales opportunities.
- Finding new customers and constantly expanding the business
- Building the business within each territory using a variety of sales techniques.
- Working closely with other teams so that everyone understands their required contribution.
- Targeting potential customers and assessing opportunities for sales.
- Maintain a high awareness and knowledge of the business market industry and internal activities to ensure that all business opportunities are identified considered and implemented appropriately



Sahara Net – Jubail Industrial City, KSA

Internet Service Provider, ICT and Internet Solutions

Jubail Branch Manager - February 2015 – January 2016

Main Tasks and Duties:

- Mainly working with EPC main and sub-contractors in Jubail Industrial Areas (Royal Commission for Jubail & Yanbu, Samsung Engineering, DAELIM, SK Engineering, Tasnee, Sahara Petrochemicals, Chemanol, Advanced Petrochem, Olayan Descon, AYTB, etc...)
- Direct all aspects including operations, customer support service, administration and sales in the branch.
- Discovering local market conditions and identify current and prospective sales opportunities.
- Bring out the best of branch's personnel by providing coaching, development and motivation.
- Managing skilled Sales Engineers, Qualified Supporting Engineers and Admin team in the branch.
- Locate areas of improvement and propose corrective actions that meet challenges and leverage growth opportunities.
- Make sure high availability for the offered service to the clients by following up with local professional support team, NOC and other department when needed.
- Address customer and employee satisfaction issues promptly.
- Network to improve the presence and reputation of the branch and company
- Managing the main branch office in Jubail Industrial Area and other 4 high availability POP's (Point of Presence) in Industrial Area, Support Area, Jubail Down Town and Outside the City of Jubail.



Sahara Net – Riyadh City, KSA

Internet Service Provider, ICT and Internet Solutions

Riyadh Branch Manager - May 2013 – January 2015

Main Tasks and Duties:

- Established PoP's (Point of Presence) in Turaif City in the north of Saudi Arabia to meet the rapidly grown business with the success of being the first ISP to serve the customers there, Turaif Branch were considered the most success story among other branches in 2015 with high ranked revenue.
- Bring out the best of branch's personnel by providing coaching, development and motivation.
- Managing skilled Sales Engineers, Qualified Supporting Engineers and Admin team in the branch.
- Locate areas of improvement and propose corrective actions that meet challenges and leverage growth opportunities.
- Make sure high availability for the offered service to the clients by following up with local professional support team, NOC and other department when needed.
- Managing the main branch office in Olaya Area and other 3 high availability POP's (Point of Presence) inside Riyadh City.



Sahara Net – Jubail Industrial City, KSA

Internet Service Provider, Networking, and Internet Solutions

Jubail Branch Manager - June 2007 – April 2013

Main Tasks and Duties:

- Mainly working with EPC main and sub-contractors in Jubail Industrial Areas
- Direct all aspects including operations, customer support service, administration and sales in the branch.
- Managing skilled Sales Engineers, Qualified Supporting Engineers and Admin team in the branch.
- Locate areas of improvement and propose corrective actions that meet challenges and leverage growth opportunities.
- Make sure high availability for the offered service to the clients by following up with local professional support team, NOC and other department when needed.
- Address customer and employee satisfaction issues promptly.
- Network to improve the presence and reputation of the branch and company
- Established and managed 3 high availability POP's (Point of Presence) in Support Industrial Area, Jubail Down Town and outside the City of Jubail which were the high ranked PoP's based on the delivered bandwidth out of it and number of clients served through the PoP's.
- Established a PoP in Jizan Area (Baish City) to serve the Jizan Economic City Project



Sahara Net – Dammam, KSA

Internet Service Provider, ICT and Internet Solutions

Corporate Sales Engineer - December 2005 – May 2007

Main Tasks and Duties:

- Researching and identifying sales opportunity, generating leads, target identification and classification
- Reaching out to new customers and making presentations outlining the benefits of product/ services.
- Understanding the client requirements and then customizing the product/ services as per their needs
- Maintaining relationship with all potential and existing clients
- Ensuring proper services and after sales support to clients

Education:

Diploma Degree: Computer and Information Technology – Specialized in Computer Networks

(2.5 Years), Grade: Very Good, Average: 86%

Jeddah Leading Higher Training Institute, Under TVTC Licensing

Languages:

Arabic: Excellent (Native)

English: Excellent

Courses:

- **DCCS** – Data Center Cleaning Specialist, by Capitoline, Cert# DCCS091937202109221402 (Sep, 2021)
- **CDCP** – Certified Data Center Professional, by EPI, Certificate ID: 6234097.20752541 (Nov, 2018) course been held in Riyadh
- **CDFOAM** – Certified Data Centre Facilities Operations Manager, by EPI, Certificate ID: 6234097.20752812 (Nov, 2018) course been held in Riyadh
- Management, Leadership and Employee Engagement Skills – The Academy for Sales Excellence – held in Bahrain
- PMP Preparation Course, 40 PDU – BrightEDGE – Dammam, KSA
- Certificates through several online courses for the subject of Business Etiquette, Time Management, Effective Communication Skills and Positive Thinking – Nibras E-Learning Portal
- Train The Trainer – JB International Trainings – Dammam, KSA
- Success Sales Call – JB International Trainings – Dammam, KSA
- Systematic Sales Acceleration – The Academy for Sales Excellence – Dammam, KSA
- MCSE 2003 Track – New Horizons CLC – Al Khobar, KSA